

xtpxlib-common

Common code and IDE support

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0 Xatapult XML Library - Common code



xtpplib library - component **xtpplib-common** - v0.9 2019-12-10

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xtpplib-common is part of the **xtpplib** library. **xtpplib** contains software for processing XML, using languages like XSLT and XProc. It consists of several separate components, all named **xtpplib-***. Everything can be found on GitHub (<https://github.com/xatapult>).

xtpplib-common is **xtpplib**'s communal component. Most other **xtpplib** components rely on it. It contains:

- XSLT libraries, with functionality for handling parameters, manipulating filenames/URIs, MIME types, etc.
- Parts of the functionality of the XSLT libraries were translated into XQuery.
- XProc (1.0) steps, implementing things like recursive directory lists, tee, creating ZIP files from directories, etc.
- Templates (empty XSLT, XProc, XQuery, etc. files) for use in the oXygen IDE.

Installation and usage information can be found on **xtpplib**'s main website <http://www.xtpplib.org>.

Technical information:

Component documentation: <http://common.xtpplib.org>

License: GNU GENERAL PUBLIC LICENSE - Version 3, 29 June 2007

Git URI: [git@github.com:xatapult/xtpplib-common](https://github.com/xatapult/xtpplib-common).git

Git site: <https://github.com/xatapult/xtpplib-common>

1 Description

xtpplib-common is xtpplib's communal component. Most other components in xtpplib are dependent on it. If you start using xtpplib, you'll also use it a lot yourself.

1.1 Contents

xtpplib-common consists of the following parts (by subdirectory):

Directory	Contents
data	XML data files. See "XML Data Files" on page 23
doc	Sources for the generation of the component's documentation. Internal use only.
docs	GitHub pages site for this component.
etc	Auxiliary files, mainly for use in the oXygen IDE.
template	Template files. These files contain XSLT, XQuery, XProc, etc. files with the main structure and headers filled in. Contain macros for use in the oXygen IDE. To install/use these files in oXygen, open its preferences dialogue (Options > Preferences...) and add the xtpplib-common/template subdirectory to its Document templates section.
xplmod	General purpose XProc (1.0) modules. See "XProc Libraries" on page 19.
xqmod	General purpose XQuery modules. This is a partial translation of the XSLT module's functionality (especially from href.mod.xsl) into XQuery.
xsd	Schemas for some of the document types used in Xatapult XML Library. See "XML Schemas" on page 24.
xsl	Some general purpose XSLT stylesheets. See "XSLT Stylesheets" on page 22.
xslmod	General purpose XSLT modules. See "XSLT Modules" on page 5.

1.2 Parameter handling in xtpplib-common

Parameters, as referred to here, are name/value pairs meant for customizing software's behavior. Things like prompts, URIs, etc. The xtpplib-common component's parameters have the following characteristics:

- Parameters in this component are handled by the XSLT module `parameteres.mod.xsl`. This includes:
 - Reading them from an XML document, either a document on its own or embedded into a bigger XML document. The result will be an XPath `map(xs:string, xs:string*)`, which can be inspected and used.
 - Expanding parameter references in strings. Parameter references are constructions like `{ $parameter-name }` (or `$ {parameter-name}`, both will yield the same results).
- Parameters are specified within an XML element called `<parameters>`, the namespace does not matter. This element can be the root of a document on its own or embedded in a bigger (XML) document. For instance:

```
<parameters>
  <parameter name="greeting">
    <value>Hello!</value>
  </parameter>
</parameters>
```

There is a schema available for this.

- A single parameter is specified using a `<parameter name="...">` child element. The value of the name attribute will be normalized (whitespace collapsed to a single space character, leading/trailing whitespace removed) and space characters are replaced with an underscore (`_`). So `name=" a b "` will become `parameter a_b`.
- Values for a parameter are specified using `<value>` child element. A parameter can have multiple values. Parameter references inside values (either written as `{ $parameter-name }` or `$ {parameter-name}`) are expanded into their values (for multi-valued parameters only the first value is used).

- It is often useful to specify values for parameters based on different circumstances. For instance based on language (Hello in English or Bonjour in French), or system type (`https://www...` for production, `http://test...` for test). This is implemented as follows:
 - When initially reading the parameters you can specify a filter map (`map(xs:string, xs:string*)`).
 - The `<value>` elements can have any attributes. These attributes are handled as whitespace separated lists of values.
 - The name of such an attribute is held against the entries in filter map. If a filter entry with this name exists, one of the values of the attribute must be present in the filter map.

For instance, assume the parameters look like this:

```
<parameters>
  <parameter name="greeting">
    <value lang="en">Hello!</value>
    <value lang="nl de">Hallo!</value>
    <value lang="fr">Bonjour!</value>
  </parameter>
  <parameter name="number">
    <value>123</value>
  </parameter>
</parameters>
```

- Reading this with an empty (or absent) filter map, or a filter map that does not have a `lang` entry, will result in a `greeting` parameter with multiple values, `Hello!`, `Hallo!` and `Bonjour!`.
- Reading this with a filter map `map{ 'lang': 'en' }` will return the `greeting` parameter with value `Hello!`.
- Reading this with a filter map `map{ 'lang': 'fr' }` will return the `greeting` parameter with value `Bonjour!`.
- Reading this with a filter map `map{ 'lang': ('en', 'de') }` (not particularly useful) will return the `greeting` parameter with values `Hello!` *and* `Hallo!`.
- In all cases the `number` parameter will get value `123` (since it has no filtering attributes on its `<value>` element).

It is possible to combine multiple filter attributes on a `<value>` element.

- Another thing that is often useful in specifying parameters is to *group* them. For this you can put a number of `<parameter>` elements inside a `<group name="...">` element. The name of the group is used as a prefix (with a dot (.) separator) for the parameters in the group. For instance:

```
<parameters>
  <group name="important">
    <parameter name="greeting">
      <value>Hello!</value>
    </parameter>
  </group>
</parameters>
```

This will result in a parameter called `important.greeting`.

2 XSLT Modules

The xtpplib-common component contains the following XSLT modules. The ones used most frequently are `general.mod.xsl` and `href.mod.xsl`.

Module	Description
<code>compare.mod.xsl</code>	XSL library module with support for comparing XML documents/elements:
<code>date-time.mod.xsl</code>	XSLT library module containing functions for working with dates and times.
<code>format-output.mod.xsl</code>	XSLT library with functions for formatting output/strings.
<code>general.mod.xsl</code>	XSLT library module with general constants and code.
<code>href.mod.xsl</code>	XSLT library module with functions for the generic handling of href-s (filenames/paths).
<code>message.mod.xsl</code>	Message related templates.
<code>mimetypes.mod.xsl</code>	MIME type conversion related functions.
<code>parameters.mod.xsl</code>	Takes an XML document with parameters and turns this into a parameter map.
<code>uuid.mod.xsl</code>	UUID related functions.

Table 2-1 - Module overview

2.1 XSLT (2.0): compare.mod.xsl

File: `xslmod/compare.mod.xsl`

XSL library module with support for comparing XML documents/elements:

Prefix	Namespace URI
<code>xtlc</code>	<code>http://www.xtpplib.nl/ns/common</code>

Named template	Description
<code>xtlc:compare-documents</code>	Compares two XML documents with each other:

Named template: `xtlc:compare-documents as element(xtlc:message)*`

Compares two XML documents with each other:

- Comments and processing instructions are ignored
- Text nodes are normalized before comparison
- Empty text nodes (after normalization) are ignored
- The comparison stops after the first difference is encountered.
- The result is either:
 - An empty set, when no differences found
 - One or more `xtlc:message` elements, `status="error"` when differences were found (you can only get more than one message on attribute differences)

Parameter	Type	Rq?	Default	Description
<code>doc1</code>	<code>document-node()</code>	yes		First document to compare.
<code>doc2</code>	<code>document-node()</code>	yes		Second document to compare.

2.2 XSLT (2.0): date-time.mod.xsl

File: `xslmod/date-time.mod.xsl`

XSLT library module containing functions for working with dates and times.

When language based, it only distinguishes between Dutch and non-Dutch (usually English). Some functions will not work using Saxon HE (week-numbers for instance).

Prefix	Namespace URI
xtlc	http://www.xtpplib.nl/ns/common

Variable	Type	Value	Description
xtlc:month-names-en	xs:string+	('January', 'February', 'March', 'April', 'May', 'June', 'July', 'August', 'September', 'October', 'November', 'December')	Sequence with the names of the months in English
xtlc:month-names-nl	xs:string+	('januari', 'februari', 'maart', 'april', 'mei', 'juni', 'juli', 'augustus', 'september', 'oktober', 'november', 'december')	Sequence with the names of the months in Dutch

Function	Description
xtlc:days-in-month()	Computes the number of days in a particular month. If values are out of range it returns 0.
xtlc:format-date-as-text()	Formats a date as a string with the month name in full.
xtlc:format-date-as-text-short()	Formats a date as a string with the month name in short.
xtlc:is-leap-year()	Returns true when a given year is a leap year
xtlc:month-name()	Returns the name of a month.
xtlc:month-name-short()	Returns the name of a month in short (abbreviated to 3 characters).
xtlc:to-date()	Creates a date from its components.
xtlc:unix-epoch()	Computes the UNIX "epoch" code (number of seconds since 1-1-1970) for a given date/time.
xtlc:week-number()	Computes the week number for a given date.
xtlc:weekday-name()	Computes the name of the weekday for a given language. Will be capitalized.
xtlc:weekday-number()	The number of the weekday (1=Monday, 7=Sunday).

Function: xtlc:days-in-month() as xs:integer

Computes the number of days in a particular month. If values are out of range it returns 0.

Parameter	Type	Description
month-number	xs:integer	The month to calculate the number of days for.
year	xs:integer	The year this month is in (important because of leap years).

Function: xtlc:format-date-as-text() as xs:string

Formats a date as a string with the month name in full.

Parameter	Type	Description
date	xs:date	The date to format.
lang	xs:string	The language for the conversion.

Function: xtlc:format-date-as-text-short() as xs:string

Formats a date as a string with the month name in short.

Parameter	Type	Description
date	xs:date	The date to format.
lang	xs:string	The language for the conversion.

Function: xtlc:is-leap-year() as xs:boolean

Returns true when a given year is a leap year

Parameter	Type	Description
year	xs:integer	The year to check.

Function: xtlc:month-name() as xs:string

Returns the name of a month.

Parameter	Type	Description
month-number	xs:integer	The month number (1-12).
lang	xs:string	The language you want the month name in.

Function: xtlc:month-name-short() as xs:string

Returns the name of a month in short (abbreviated to 3 characters).

Parameter	Type	Description
month-number	xs:integer	The month number (1-12).
lang	xs:string	The language you want the month name in.

Function: xtlc:to-date() as xs:date

Creates a date from its components.

Parameter	Type	Description
day	xs:integer	Day number to use.
month	xs:integer	Month number to use.
year	xs:integer	Year to use.

Function: xtlc:unix-epoch() as xs:decimal

Computes the UNIX "epoch" code (number of seconds since 1-1-1970) for a given date/time.

Parameter	Type	Description
datetime	xs:dateTime	The date/time to compute the epoch code for.

Function: xtlc:week-number() as xs:integer

Computes the week number for a given date.

Parameter	Type	Description
date	xs:date	Date to use.

Function: xtlc:weekday-name() as xs:string

Computes the name of the weekday for a given language. Will be capitalized.

Parameter	Type	Description
date	xs:date	Date to use.
lang	xs:string	The language you want the name in.

Function: xtlc:weekday-number() as xs:integer

The number of the weekday (1=Monday, 7=Sunday).

Parameter	Type	Description
date	xs:date	Date to use.

2.3 XSLT (2.0): format-output.mod.xsl

File: xslmod/format-output.mod.xsl

XSLT library with functions for formatting output/strings.

When language based, we only distinguish between Dutch and non-Dutch (usually English).

Prefix	Namespace URI
xtlc	http://www.xtpplib.nl/ns/common

Function	Description
xtlc:duration2str()	Turns a day/time duration into a more readable string, e.g. 1d3h40m12s
xtlc:format-amount()	Formats an amount by adding a € sign and always use double digits.
xtlc:format-double()	Formats a double as a string with a given amount of digits.
xtlc:size2str()	Turns an integer (e.g. a file size) into a (rounded) number using a Kb/Mb/Gb suffix.

Function: xtlc:duration2str() as xs:string

Turns a day/time duration into a more readable string, e.g. 1d3h40m12s

Parameter	Type	Description
duration	xs:dayTimeDuration	The duration to convert.
round-seconds	xs:boolean	Whether the seconds part must be rounded.

Function: xtlc:format-amount() as xs:string

Formats an amount by adding a € sign and always use double digits.

For the Dutch language, . and , are swapped.

Parameter	Type	Description
amount	xs:double	The amount to format.
lang	xs:string	The language for the conversion.

Function: xtlc:format-double() as xs:string

Formats a double as a string with a given amount of digits.

For the Dutch language, . and , are swapped.

Parameter	Type	Description
dbl	xs:double	Number to convert
digits	xs:integer	The number of digits to use. When < 0 this is left open.
lang	xs:string	The language for the conversion.

Function: xtlc:size2str() as xs:string

Turns an integer (e.g. a file size) into a (rounded) number using a Kb/Mb/Gb suffix.

Parameter	Type	Description
size	xs:integer	The size to convert.

2.4 XSLT (2.0): general.mod.xsl

File: xslmod/general.mod.xsl

XSLT library module with general constants and code.

Prefix	Namespace URI
xtlc	http://www.xtpplib.nl/ns/common

Variable	Type	Value	Description
xtlc:default-dt-format	xs:string	'[Y]-[M01]-[D01] [H01]:[m01]:[s01]'	Default date/time format string (yyyy-mm-dd ...).
xtlc:default-dt-format-en	xs:string	'[M01]-[D01]-[Y] [H01]:[m01]:[s01]'	Date/time format string (English: mm-dd-yyyy ...).
xtlc:default-dt-format-nl	xs:string	'[D01]-[M01]-[Y] [H01]:[m01]:[s01]'	Date/time format string (Dutch: dd-mm-yyyy ...).
xtlc:internal-error-prompt	xs:string	'Internal error: '	Add this in front of any internal error raised.
xtlc:language-en	xs:string	'en'	Language code for English
xtlc:language-nl	xs:string	'nl'	Language code for Dutch
xtlc:namespace-xtlc-common	xs:string	namespace-uri-for-prefix('xtlc', doc('')/*)	Namespace used for xtpplib-common.
xtlc:status-codes	xs:string+	(\$xtlc:status-info, \$xtlc:status-warning, \$xtlc:status-error, \$xtlc:status-debug)	Sequence with all valid status codes.
xtlc:status-debug	xs:string	'debug'	Generic debug status/severity code.
xtlc:status-error	xs:string	'error'	Generic error status/severity code.
xtlc:status-info	xs:string	'info'	Generic info (a.k.a. OK) status/severity code.
xtlc:status-warning	xs:string	'warning'	Generic warning status/severity code.

Named template	Description
xtlc:raise-error	Stops any processing by raising an error.

Function	Description
xtlc:att2str()	Turns an attribute into a string representation, suitable for display (e.g. name="value").
xtlc:capitalize()	Capitalizes a string (makes the first character uppercase).
xtlc:char-repeat()	Returns a string with a single character repeated a given number of times.
xtlc:count-leading-whitespace()	Counts the number of whitespace characters at the beginning of a string
xtlc:elm2str()	Turns an element into a descriptive string (the element with all its attributes, excluding schema references).
xtlc:item2element()	Tries to find the element belonging to a given item.
xtlc:items2str()	Creates a string from a sequence of items.
xtlc:prefix-to-length()	Prefixes a string with a given character so it will get at least a given length.
xtlc:q()	Returns the input string quoted ("\$in")
xtlc:str2bln()	Safe conversion of a string into a boolean.
xtlc:str2id()	Turns a string into a valid identifier, adding a prefix.
xtlc:str2id()	Turns a string into a valid identifier.
xtlc:str2int()	Safe conversion of a string to an integer.
xtlc:str2seq()	Converts a string with a list of words into a sequence of words.
xtlc:text2lines()	Converts text into separate lines.

Named template: xtlc:raise-error

Stops any processing by raising an error.

Parameter	Type	Rq?	Default	Description
error-name	xs:string		\$xslt:status-error	The (optional) name of the error. Must be an NCName.
msg-parts	item()+	yes		Error message to show (in parts, all parts will be concatenated by <code>xslt:items2str()</code>).

Function: `xslt:att2str()` as `xs:string`

Turns an attribute into a string representation, suitable for display (e.g. `name="value"`).

Parameter	Type	Description
att	attribute()?	Attribute to convert.

Function: `xslt:capitalize()` as `xs:string`

Capitalizes a string (makes the first character uppercase).

Parameter	Type	Description
in	xs:string	The string to work on.

Function: `xslt:char-repeat()` as `xs:string`

Returns a string with a single character repeated a given number of times.

Parameter	Type	Description
char	xs:string	The first character of this string is the character to repeat. If empty, an empty string is returned.
repeat	xs:integer	The number of repeats. If ≤ 0 , an empty string is returned.

Function: `xslt:count-leading-whitespace()` as `xs:integer`

Counts the number of whitespace characters at the beginning of a string

Parameter	Type	Description
text	xs:string	Text to work on.

Function: `xslt:elm2str()` as `xs:string`

Turns an element into a descriptive string (the element with all its attributes, excluding schema references).

Parameter	Type	Description
elm	element()?	Element to convert

Function: `xslt:item2element()` as `element()?`

Tries to find the element belonging to a given item.

- When the item is of type `xs:string` or `xs:anyURI`, it is assumed to be a document reference. The root element of this is returned.
- When the item is of type `document-node()`, the root element of this document is returned
- When the item is of type `element()`, this is returned

You can choose whether to produce an error message or `()` when the item cannot be resolved.

Parameter	Type	Description
item	item()	The item to work on
error-on-non-resolve	xs:boolean	Whether to generate an error when <code>\$item</code> could not be resolved. Otherwise, the function will return <code>()</code> .

Function: `xslt:items2str()` as `xs:string`

Creates a string from a sequence of items.

Useful for easy creation of messages consisting of multiple parts and pieces.

Parameter	Type	Description
items	item()*	The message parts to combine

Function: xtlc:prefix-to-length() as xs:string

Prefixes a string with a given character so it will get at least a given length.

Parameter	Type	Description
in	xs:string	String to prefix
prefix-char	xs:string	String to prefix with. Only first character is used. If empty, * is used.
length	xs:integer	The length to reach.

Function: xtlc:q() as xs:string

Returns the input string quoted ("\$in")

Parameter	Type	Description
in	xs:string?	String to convert.

Function: xtlc:str2bln() as xs:boolean

Safe conversion of a string into a boolean.

When \$in is empty or not convertible into a boolean, \$default is returned.

Parameter	Type	Description
in	xs:string?	String to convert.
default	xs:boolean	Default value to return when \$in is empty or cannot be converted.

Function: xtlc:str2id() as xs:string

Turns a string into a valid identifier, adding a prefix.

All characters that are not allowed in an identifier are converted into underscores.

When the result does not start with a letter or underscore, the prefix id- is added.

Parameter	Type	Description
in	xs:string	String to convert.
prefix	xs:string?	Prefix to apply.

Function: xtlc:str2id() as xs:string

Turns a string into a valid identifier.

All characters that are not allowed in an identifier are converted into underscores.

When the result does not start with a letter or underscore, the prefix id- is added.

Parameter	Type	Description
in	xs:string	String to convert.

Function: xtlc:str2int() as xs:integer

Safe conversion of a string to an integer.

When \$in is empty or not convertible to an integer, \$default is returned.

Parameter	Type	Description
in	xs:string?	String to convert.
default	xs:integer	Default value to return when \$in is empty or cannot be converted.

Function: xtlc:str2seq() as xs:string*

Converts a string with a list of words into a sequence of words.

Parameter	Type	Description
in	xs:string?	String to convert.

Function: xtlc:text2lines() as xs:string*

Converts text into separate lines.

Uses the LF as separator; CRs are removed.

Parameter	Type	Description
text	xs:string?	The text to convert.
remove-empty-start-end-lines	xs:boolean	When true any empty (containing whitespace only) lines at the beginning and end are removed.
normalize-indents	xs:boolean	When true the indents of the lines are normalized: the indent of the non-whitespace line with the minimum leading whitespace is removed from all other lines. Lines that contain only whitespace will become zero length.

2.5 XSLT (2.0): href.mod.xsl

File: xslmod/href.mod.xsl

XSLT library module with functions for the generic handling of href-s (filenames/paths).

Prefix	Namespace URI
xtlc	http://www.xtpxlib.nl/ns/common

Variable	Type	Value	Description
xtlc:protocol-file	xs:string	'file'	File protocol specifier.

Function	Description
xtlc:href-add-encoding()	Percentage encodes all "strange" characters (%xx). Any existing percentage encodings will be kept as is.
xtlc:href-canonical()	Makes an href canonical (remove any .. and . directory specifiers).
xtlc:href-concat()	Performs a safe concatenation of href components:
xtlc:href-ext()	Returns the extension part of an href.
xtlc:href-is-absolute()	Returns true if the href is considered absolute.
xtlc:href-name()	Returns the (file)name part of an href.
xtlc:href-name-noext()	Returns the (file)name part of an href without its extension.
xtlc:href-noext()	Returns the complete href path without its extension.
xtlc:href-path()	Returns the path part of an href.
xtlc:href-protocol()	Returns the protocol part of an href (without the ://).
xtlc:href-protocol()	Returns the protocol part of an href (without the ://) or a default value when none present.
xtlc:href-protocol-add()	Adds a protocol specifier (written without the trailing ://, e.g. http) to an href.
xtlc:href-protocol-present()	Returns true when an href has a protocol specifier (e.g. file:// or http://).
xtlc:href-protocol-remove()	Removes the protocol part from an href.
xtlc:href-relative()	Computes a relative href from one document to another.
xtlc:href-relative-from-path()	Computes a relative href from a directory path to a document.
xtlc:href-result-doc()	Transforms an href into something xsl:result-document/@href can use.

Function: xtlc:href-add-encoding() as xs:string

Percentage encodes all "strange" characters (%xx). Any existing percentage encodings will be kept as is.

Parameter	Type	Description
href	xs:string	href to work on.

Function: xtlc:href-canonical() as xs:string

Makes an href canonical (remove any .. and . directory specifiers).

Examples:

- href-canonical('a/b/./c') ==> 'a/c'

Parameter	Type	Description
href	xs:string	href to work on.

Function: xtlc:href-concat() as xs:string

Performs a safe concatenation of href components:

- Translates all backslashes into slashes
- Makes sure that all components are separated with a single slash
- If somewhere in the list is an absolute path, the concatenation stops.

Examples:

- xtlc:href-concat(('a', 'b', 'c')) ==> 'a/b/c'
- xtlc:href-concat(('a', '/b', 'c')) ==> '/b/c'

Parameter	Type	Description
href-path-components	xs:string*	The path components to concatenate into a full href.

Function: xtlc:href-ext() as xs:string

Returns the extension part of an href.

Examples:

- xtlc:href-ext('a/b/c.xml') ==> 'xml'
- xtlc:href-ext('a/b/c') ==> ''

Parameter	Type	Description
href	xs:string	href to work on.

Function: xtlc:href-is-absolute() as xs:boolean

Returns true if the href is considered absolute.

An href is considered absolute when it starts with a / or \, contains a protocol specifier (e.g. file://) or starts with a Windows drive letter (e.g. C:).

Parameter	Type	Description
href	xs:string	href to work on.

Function: xtlc:href-name() as xs:string

Returns the (file)name part of an href.

Examples:

- xtlc:href-name('a/b/c') ==> 'c'
- xtlc:href-name('c') ==> 'c'

Parameter	Type	Description
href	xs:string	href to work on.

Function: xtlc:href-name-noext() as xs:string

Returns the (file)name part of an href without its extension.

Examples:

- xtlc:href-name-noext('a/b/c.xml') ==> 'c'
- xtlc:href-name-noext('a/b/c') ==> 'c'

Parameter	Type	Description
href	xs:string	href to work on.

Function: xtlc:href-noext() as xs:string

Returns the complete href path without its extension.

Examples:

- `xtlc:href-noext('a/b/c.xml') ==> 'a/b/c'`
- `xtlc:href-noext('a/b/c') ==> 'a/b/c'`

Parameter	Type	Description
href	xs:string	href to work on.

Function: xtlc:href-path() as xs:string

Returns the path part of an href.

Examples:

- `xtlc:href-path('a/b/c') ==> 'a/b'`
- `xtlc:href-path('c') ==> ''`

Parameter	Type	Description
href	xs:string	href to work on.

Function: xtlc:href-protocol() as xs:string

Returns the protocol part of an href (without the `://`).

Examples:

- `xtlc:href-protocol('http://...') ==> 'http'`

Parameter	Type	Description
href	xs:string	href to work on.

Function: xtlc:href-protocol() as xs:string

Returns the protocol part of an href (without the `://`) or a default value when none present.

Examples:

- `xtlc:href-protocol('http://...', 'file') ==> 'http'`
- `xtlc:href-protocol('/a/b/c', 'file') ==> 'file'`

Parameter	Type	Description
href	xs:string	href to work on.
default-protocol	xs:string	Default protocol to return when \$ref contains none.

Function: xtlc:href-protocol-add() as xs:string

Adds a protocol specifier (written without the trailing `://`, e.g. `http`) to an href.

Parameter	Type	Description
href	xs:string	href to work on.
protocol	xs:string	The protocol to add, without a leading <code>://</code> part (e.g. just <code>file</code> or <code>http</code>).
force	xs:boolean	When true an existing protocol is removed first. When false, a reference with an existing protocol is left unchanged.

Function: xtlc:href-protocol-present() as xs:boolean

Returns true when an href has a protocol specifier (e.g. `file://` or `http://`).

Parameter	Type	Description
href	xs:string	href to work on.

Function: xtlc:href-protocol-remove() as xs:string

Removes the protocol part from an href.

Examples:

- `xtlc:protocol-remove('file:///a/b/c') ==> '/a/b/c'`

Weird exceptions:

- `xtlc:protocol-remove('file:/a/b/c') ==> '/a/b/c'`
- `xtlc:protocol-remove('file:/C:/a/b/c') ==> 'C:/a/b/c'`

Parameter	Type	Description
href	xs:string	href to work on.

Function: xtlc:href-relative() as xs:string

Computes a relative href from one document to another.

Examples:

- `href-relative('a/b/c/from.xml', 'a/b/to.xml') ==> '../to.xml'`
- `href-relative('a/b/c/from.xml', 'a/b/d/to.xml') ==> '../d/to.xml'`

Parameter	Type	Description
from-href	xs:string	href (of a document) of the starting point.
to-href	xs:string	href (of a document) of the target.

Function: xtlc:href-relative-from-path() as xs:string

Computes a relative href from a directory path to a document.

Examples:

- `href-relative-from-path('a/b/c', 'a/b/to.xml') ==> '../to.xml'`
- `href-relative-from-path('a/b/c', 'a/b/d/to.xml') ==> '../d/to.xml'`

Parameter	Type	Description
from-href-path	xs:string	href (of a directory) of the starting point.
to-href	xs:string	href (of a document) of the target.

Function: xtlc:href-result-doc() as xs:string

Transforms an href into something `xsl:result-document/@href` can use.

`xsl:result-document/@href` needs a `file://` in front and has some strict rules about the formatting. The input to this function *must* be an absolute href!

Parameter	Type	Description
href	xs:string	href to work on. Must be absolute!

2.6 XSLT (2.0): message.mod.xsl

File: `xslmod/message.mod.xsl`

Message related templates.

A message is a standardized piece of XML used for inserting (error, debug, etc.) messages into XML documents.

Prefix	Namespace URI
xtlc	http://www.xtpplib.nl/ns/common
Named template	Description
xtlc:msg-create	Generates a standard xtlc:message element.

Named template: xtlc:msg-create as element(xtlc:message)

Generates a standard xtlc:message element.

Parameter	Type	Rq?	Default	Description
extra-attributes	attribute()*		()	Any extra attributes to add to the message.
extra-contents	element()*		()	Any extra elements to add to the message.
msg-parts	item()+	yes		Message to show (parts will be concatenated by xtlc:items2str()).
status	xs:string	yes		The status of the message. Must be one of the \$xtlc:status-* constants as defined in general.mod.xsl.

2.7 XSLT (2.0): mimetypes.mod.xsl

File: xslmod/mimetypes.mod.xsl

MIME type conversion related functions.

These conversions work with an external MIME type/extension table.

Prefix	Namespace URI
xtlc	http://www.xtpplib.nl/ns/common
Function	Description
xtlc:ext2mimetype()	Turns an href extension (e.g. xml') into the correct MIME type ('text/xml').
xtlc:mimetype2ext()	Turns a MIME type (e.g. 'text/xml') into a corresponding href extension ('xml').

Function: xtlc:ext2mimetype() as xs:string

Turns an href extension (e.g. xml') into the correct MIME type ('text/xml').

When it cannot find an appropriate MIME type it returns the empty string.

Parameter	Type	Description
ext	xs:string	The extension to convert.

Function: xtlc:mimetype2ext() as xs:string

Turns a MIME type (e.g. 'text/xml') into a corresponding href extension ('xml').

When it doesn't recognize the MIME type it returns the empty string.

Parameter	Type	Description
mimetype	xs:string	The MIME type to convert.

2.8 XSLT (3.0): parameters.mod.xsl

File: xslmod/parameters.mod.xsl

Takes an XML document with parameters and turns this into a parameter map.

More information here.

Prefix	Namespace URI
xtlc	http://www.xtpplib.nl/ns/common

Variable	Type	Value	Description
xtlc:parameter-group-separator	xs:string	'.'	When a <group> element is encountered, this character is used as a separator after the group's name.
xtlc:parameter-main-trigger-character	xs:string	'\$'	Use this variable for a quick check on whether something might contain a parameter: contains(..., \$xtlc:parameter-main-trigger-character)

Function	Description
xtlc:expand-text-against-parameters()	Expands parameter references in \$text (either {\$...} or \${...}) against the parameters in \$parameter-map. If a parameter has multiple values, only the first one is used.
xtlc:parameters-get()	Tries to locate a <parameters> element (in any namespace) underneath \$root-item and processes the child <parameter> and <group> elements in here into a parameter map.

Function: xtlc:expand-text-against-parameters() as xs:string

Expands parameter references in \$text (either {\$...} or \${...}) against the parameters in \$parameter-map. If a parameter has multiple values, only the first one is used.

Parameter	Type	Description
text	xs:string	Text to expand.
parameter-map	map(xs:string, xs:string*)	Map with parameter values.

Function: xtlc:parameters-get() as map(xs:string, xs:string*)

Tries to locate a <parameters> element (in any namespace) underneath \$root-item and processes the child <parameter> and <group> elements in here into a parameter map.

The <value> elements are filtered according to the entries in \$filters.

Parameter references in values (either {\$...} or \${...}) are expanded. If a parameter has multiple values, only the first one is used.

Parameter	Type	Description
root-item	item()	Root item under which the first <parameters> element is processed. Can be an href, a document node or an element. See xtlc:item2element() on how this is processed.
filters	map(xs:string, xs:string*)?	Any filters for the parameter's <value> elements.

2.9 XSLT (2.0): uuid.mod.xsl

File: xslmod/uuid.mod.xsl

UUID related functions.

Works only in Saxon PE or EE (not in the free HE), because we are calling an underlying Java function.

Prefix	Namespace URI
xtlc	http://www.xtpplib.nl/ns/common

Function	Description
xtlc:get-uuid()	Returns a random unique UUID (by calling an underlying Java function)
xtlc:is-real-uuid()	Checks whether a string contains a "real" UUID (conforms to the UUID formatting rules).

Function: xtlc:get-uuid() as xs:string

Returns a random unique UUID (by calling an underlying Java function)

Function: xtlc:is-real-uuid() as xs:boolean

Checks whether a string contains a "real" UUID (conforms to the UUID formatting rules).

Example: 5EAE5C68-7394-48d7-A50B-1669E8D3A6C9 (upper/lower-case both admitted)

Parameter	Type	Description
id	xs:string?	UUID to check.

3 XProc Libraries

The xtpxlib-common component contains the following XProc (1.0) library module:

Module	Description
common.mod.xpl	

Table 3-1 - Module overview

3.1 XProc (1.0) library: common.mod.xpl

File: xplmod/common.mod/common.mod.xpl

XProc (1.0) library with generic steps.

Prefix	Namespace URI
xtlc	http://www.xtpxlib.nl/ns/common

Step	Description
xtlc:copy-directory	Copies a full directory structure.
xtlc:copy-file	Copies a file, if necessary from inside a zip file.
xtlc:log	Writes a message to a log file.
xtlc:recursive-directory-list	Returns the contents of a directory, going into sub-directories recursively. When the requested directory does not exist, it returns only a c:directory root element with an error="true" attribute.
xtlc:remove-dir	Removes a full directory When the directory does not exist, everything continues without error.
xtlc:tee	Tees the input to a file and passes it unchanged (like the Unix tee command).
xtlc:zip-directory	Zips a directory and its sub-directories into a single zip file.

Step: xtlc:copy-directory

Copies a full directory structure.

Port	Type	Primary?	Description
source	in	yes	Input, will be passed unchanged.
result	out	yes	The input unchanged.

Option	Rq?	Default	Description
href-source-dir	yes		Reference to the directory to copy from (must have a leading file:/ specifier!).
href-target-dir	yes		Reference to the directory to copy to (must have a leading file:/ specifier!). If it does not exist the step will try to create it.

Step: xtlc:copy-file

Copies a file, if necessary from inside a zip file.

Port	Type	Primary?	Description
source	in	yes	Input, will be passed unchanged.
result	out	yes	The input unchanged.

Option	Rq?	Default	Description
enable		true()	Whether the copying is done at all.
href-source	yes		Reference to the source file to copy (must have a leading file:/ specifier!).
href-source-zip		' '	Document reference to a zip file (must have a leading file:/ specifier!). When filled, \$href-source is assumed to be a path inside this zip.
href-target	yes		Reference to the target.

Step: xtlc:log

Writes a message to a log file.

Port	Type	Primary?	Description
source	in	yes	Input to the logging, will be passed unchanged to the output
result	out	yes	The input unchanged.

Option	Rq?	Default	Description
enable		true()	Whether the logging will be done at all.
href-log	yes		Name of the file to write the log messages to (must have a leading file:/ specifier!).
keep-messages		100	The number of messages to keep in the logfile. If le 0, all messages are kept. Set by default to 100 to prevent overflowing files...
message	yes		The actual log message to write.
status		'ok'	Status of the message. Must be ok, warning, error or debug.

Step: **xvlc:recursive-directory-list**

Returns the contents of a directory, going into sub-directories recursively. When the requested directory does not exist, it returns only a `c:directory` root element with an `error="true"` attribute.

Adapted from Norman Walsh's [example code](#).

Port	Type	Primary?	Description
result	out	yes	The resulting directory structure listing in XML format.

Option	Rq?	Default	Description
depth		-1	The sub-directory depth to go. When le 0, all sub-directories are processed.
exclude-filter			An optional regular expression exclude filter.
flatten		false()	When true, the list will be "flattened": All <code>c:file</code> children will be direct children of the root's <code>c:directory</code> element. These <code>c:file</code> elements get a <code>@name</code> , <code>@href-abs</code> (absolute filename) and <code>@href-rel</code> (relative filename) attribute.
include-filter			An optional regular expression include filter.
path	yes		The path to get the directory listing from.

Step: **xvlc:remove-dir**

Removes a full directory When the directory does not exist, everything continues without error.

Port	Type	Primary?	Description
source	in	yes	Input, will be passed unchanged.
result	out	yes	The input unchanged.

Option	Rq?	Default	Description
enable		true()	Whether the removal is done at all.
href-dir	yes		Reference to the directory to remove (must have a leading file:/ specifier!).

Step: **xvlc:tee**

Tees the input to a file and passes it unchanged (like the Unix tee command).

Port	Type	Primary?	Description
source	in	yes	Input to the tee.
result	out	yes	The input unchanged (unless a <code>\$root-attribute-href</code> was specified).

Option	Rq?	Default	Description
enable		true()	Whether to actually do the write. When false, nothing happens.
href	yes		Name of the file to write to (must have a leading file:/ specifier!)
root-attribute-href		' '	If filled, <code>\$href</code> is recorded as an attribute with this name on the root element of the original input. Must be a valid attribute name.

Step: **xvlc:zip-directory**

Zips a directory and its sub-directories into a single zip file.

Port	Type	Primary?	Description
result	out	yes	The output of the actual zip step, listing all the files that went in.

Option	Rq?	Default	Description
base-path	yes		Directory which contents will be stored in the zip (must have a leading <code>file:/</code> specifier!)
href-target-zip	yes		Document reference for the zip file to produce (must have a leading <code>file:/</code> specifier!)
include-base		true()	When true, the last part of <code>\$base-path</code> (e.g. <code>a/b/c ==> c</code>) is used as the root directory in the zip file.

4 XSLT Stylesheets

The xtpplib-common component contains the following XSLT Stylesheets:

Module	Description
get-system-properties.xsl	Gets all the XSLT available system properties (as returned by <code>system-property()</code>).
xslmod2xqmod-stub.xsl	This stylesheet translates an XSLT module (in xtpplib "style") into a stub for an XQuery Module. After this you still need to hand-edit it to make it all work.

Table 4-1 - Module overview

4.1 XSLT (2.0): get-system-properties.xsl

File: `xsl/get-system-properties.xsl`

Gets all the XSLT available system properties (as returned by `system-property()`).

4.2 XSLT (2.0): xslmod2xqmod-stub.xsl

File: `xsl/xslmod2xqmod-stub.xsl`

This stylesheet translates an XSLT module (in xtpplib "style") into a stub for an XQuery Module. After this you still need to hand-edit it to make it all work.

See as an example `href.mod.xsl`. Large parts of this module were turned into XQuery by this stylesheet. The result (edited after this initial conversion) is in the `xqmod` directory of this component.

5 XML Data Files

The xtpxlib-common component contains the following XML data files:

Module	Description
dummy.xml	Dummy file to use as input for processes that require an XML input document but the input is ignored.
fop-default-config.xml	Default configuration file for the FOP XSL-FO renderer.
mimetypes-table.xml	Table used for transforming file extensions into a MIME type and vice versa.

Table 5-1 - Module overview

5.1 XML document: dummy.xml

File: data/dummy.xml

Root element: <dummy>

Dummy file to use as input for processes that require an XML input document but the input is ignored.

5.2 XML document: fop-default-config.xml

File: data/fop-default-config.xml

Root element: <fop>

Default configuration file for the FOP XSL-FO renderer.

The only thing this configuration file does is set the font handling to "auto-detect" (meaning it will try the use the system fonts).

5.3 XML document: mimetypes-table.xml

File: data/mimetypes-table.xml

Root element: <mimetypes> (namespace: <http://www.xtpxlib.nl/ns/mimetypes>)

Table used for transforming file extensions into a MIME type and vice versa.

Follows the mimetypes.xsd schema. Used internally by the mimetypes.mod.xsl module, but might also be useful in other situations.

6 XML Schemas

The xtpplib-common component contains the following XML Schemas:

Module	Description
message.xsd	Schema for messages used and created by this component.
mimetypes.xsd	Schema for the MIME type association datafile.
parameters.xsd	Schema for sets of parameters as used by this library.

Table 6-1 - Module overview

6.1 XML Schema: message.xsd

File: xsd/message.xsd

Target namespace: <http://www.xtpplib.nl/ns/common>

Schema for messages used and created by this component.

See also message.mod.xsl.

Element	Description
message	A message generated by this component.

6.2 XML Schema: mimetypes.xsd

File: xsd/mimetypes.xsd

Target namespace: <http://www.xtpplib.nl/ns/mimetypes>

Schema for the MIME type association datafile.

See also mimetypes-table.xml and mimetypes.mod.xsl.

Element	Description
mimetypes	Root element of the MIME types associaton list.

6.3 XML Schema: parameters.xsd

File: xsd/parameters.xsd

Schema for sets of parameters as used by this library.

Use parameters.mod.xsl for turning these lists into maps. An explanation of the parameter mechanism can be found [here](#).

Although this is schema for no namespace, parameters can be in *any* namespace (if you use parameters.mod.xsl for processing them).

Element	Description
parameters	Root element for a set of parameters (either in a document on its own or embedded).