

# XMLutils Documentation

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## 1 What is XMLutils?

At the moment XMLutils is an exploration of how to read (and in the future write) data from XML files via an XOP. There is no guarantee that any of the functionality that currently exists will remain in the same form as the package evolves. This is because we are constantly learning. This will make the XOP an pre-alpha release. It uses the libxml2 library, <http://xmlsoft.org>

## 2 XPath expressions

A description of XPath is outside the scope of this documentation, partially because the authors don't fully understand it. For a tutorial please see <http://www.w3schools.com/xpath/default.asp>. The XPath expressions are evaluated to create a nodeset. The nodes in this nodeset are then output in different ways, e.g. as a string, or in a wave. Xpath expressions are quite powerful and can be used to extract data from many places in the document. As I said, look at the tutorial.

## 3 Available functions

**xmlelemlist("filenameStr")**

### Arguments

- FILENAMESTR - a string containing the path to the XML file of interest.

### Usage

```
xmlelemlist("/Users/andrew/Desktop/XMLtest/build/Debug/air_h2o.xml")
```

### Output

W\_ELEMENTLIST - a textwave with 3 columns. The first column contains the full path of each of the nodes in the XML file. The second column contains

the namespace associated with each of the element nodes. The third column contains the namespace prefix associated with each namespace.

## XMLstrFmXpath("filenameStr","xpathStr","namespaceStr","optionsStr")

### Arguments

- FILENAMESTR - a string containing the path to the XML file of interest.
- XPATHSTR - a string with the XPath to be evaluated
- NAMESPACESTR - a string for registering prefixes and namespaces for use with the XPath expression. This should take the form "*prefix1=namespace1 prefix2=namespace2*" (i.e. separated by whitespace).
- OPTIONSTR - a string to pass options to the function.

### Usage

This command extracts the intensities node from the air\_h2O.xml file, as a string:

```
print XMLstringfromXpath("/users/Andrew/air_h2O.xml", "//xrdml:intensities",
"xrdml=http://www.xrdml.com/XRDMeasurement/1.0", "" )
```

The xpathStr "*//xrdml:intensities*" means get the content of all element nodes named *intensities* from the *xrdml* namespace. *Please note, all XPath expressions are case-sensitive.*

The namespaceStr "*xrdml=http://www.xrdml.com/XRDMeasurement/1.0*" registers the *http://www.xrdml.com/XRDMeasurement/1.0* namespace with the *xrdml* prefix. If we had used a different prefix, we would have to have used the same one in the xpathStr. Some XML files (nodes) do not have namespaces associated with them, so there is no need to register a namespace, in which case you can use "" as the namespaceStr. If you want to know the namespace associated with a specific node then use the *xmlelementlist()* function (in XML each node can have a different namespace).

If there is more than 1 node that matches the xpathStr expression, then the content of that node is appended to the string, for example:

```
print xmlstrfmxpath("/Users/andrew/cd_catalog.xml", "//TITLE", "", "")
```

results in:

*Empire Burlesque Hide your heart Greatest Hits Still got the blues Eros One night only Sylvias Mother Maggie May Romanza When a man loves a woman Black angel 1999 Grammy Nominees For the good times Bi g Willie style Tupelo Honey Soulsville The very best of Stop Bridge of Spies Private Dancer Midt om natten Pavarotti Gala Concert The dock of the bay Picture book Red Unchain my heart*

If you only wanted the first title you could've used:

```
print xmlstrfmxpath("/Users/andrew/cd_catalog.xml", "//CD[1]/TITLE", "", "")
```

If you wanted the all content of all the nodes you could use:

```
print xmlstrfmxpath("/Users/andrew/cd_catalog.xml", "//CD/*", "", "")
```

All of the content of the 1st node:

```
print xmlstrfmxpath("/Users/andrew/cd_catalog.xml", "//CD[1]/*", "", "")
```

## Output

A string containing the output is returned.

## XMLwaveFmXPath("filenameStr","xpathStr","namespaceStr","optionsStr")

### Arguments

- FILENAMESTR - a string containing the path to the XML file of interest.
- XPATHSTR - a string with the XPath to be evaluated
- NAMESPACESTR - a string for registering prefixes and namespaces for use with the XPath expression. This should take the form "*prefix1=namespace1 prefix2=namespace2*" (i.e. separated by whitespace).
- OPTIONSTR - a string to pass options to the function.

### Usage

See the XMLSTRFMXPATH function for more usage details, they are exactly the same, except for the name of the function.

## Output

M\_XMLCONTENT - a 2D matrix textwave. Please see the XMLSTRFMXPATH for it's usage and output. This function simply parses that output into tokens (using whitespace as a separator). Data from different nodes in the file are put into successive columns in the wave. For example if the XPath expression matches 4 different nodes, then there will be 4 columns. The total number of rows will be equal to number of tokens from the element with the biggest content. Creating a numeric wave from this is simple:

```
make/n=(dimsize(M_xmlcontent,0),dimsize(M_xmlcontent,1)) numbers = str2num(M_xmlcontent)
```

It is unlikely that all the nodes will have the same number of tokens,

W\_XMLCONTENTNODES - a 1D textwave containing the path to each of the nodes that match the XPath expression.

## 4 Licencing

This package uses the libxml2 library from <http://xmlsoft.org/> <http://xmlsoft.org/>, which is written by Daniel Veillard. The libxml2 package is released under the MIT licence:

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