`omdoc.sty/cls`: Semantic Markup for Open Mathematical Documents in LaTeX*

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Abstract

The `omdoc` package is part of the sTeX collection, a version of TeX/LaTeX that allows to markup TeX/LaTeX documents semantically without leaving the document format, essentially turning TeX/LaTeX into a document format for mathematical knowledge management (MKM).

This package supplies an infrastructure for writing OMDoc documents in LaTeX. This includes a simple structure sharing mechanism for sTeX that allows to to move from a copy-and-paste document development model to a copy-and-reference model, which conserves space and simplifies document management. The augmented structure can be used by MKM systems for added-value services, either directly from the sTeX sources, or after translation.

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Contents

1 Introduction

The `omdoc` package supplies macros and environment that allow to label document fragments and to reference them later in the same document or in other documents. In essence, this enhances the document-as-trees model to documents-as-directed-acyclic-graphs (DAG) model. This structure can be used by MKM systems for added-value services, either directly from the sTEX sources, or after translation. Currently, trans-document referencing provided by this package can only be used in the sTEX collection.

sTEX is a version of TEX/LATEX that allows to markup TEX/LATEX documents semantically without leaving the document format, essentially turning TEX/LATEX into a document format for mathematical knowledge management (MKM). The package supports direct translation to the OMDoc format [Koh06]

DAG models of documents allow to replace the "Copy and Paste" in the source document with a label-and-reference model where document are shared in the document source and the formatter does the copying during document formatting/presentation.[1][2][3]

2 The User Interface

The `omdoc` package generates four files: `omdoc.cls`, `omdoc.sty` and their LATEXML bindings `omdoc.cls.ltxml` and `omdoc.sty.ltxml`. We keep the corresponding code fragments together, since the documentation applies to both of them and to prevent them from getting out of sync. The OMDoc class is a minimally changed variant of the standard `article` class that includes the functionality provided by `omdoc.sty`. Most importantly, `omdoc.cls` sets up the LATEXML infrastructure and thus should be used if OMDoc is to be generated from the sTEX sources. The rest of the documentation pertains to the functionality introduced by `omdoc.sty`.

2.1 Package and Class Options

`noindex` `omdoc.sty` has the `noindex` package option, which allows to suppress the creation
`extrefs` of index entries. The option can be set to activate multifile support, see [Koh12c] for details.

`omdoc.cls` accepts all options of the `omdoc.sty` (see Subsection2.0) and `article.cls` and just passes them on to these. [4]

2.2 Document Structure

`document` The top-level `document` environment is augmented with an optional key/value

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[1]EDNOTE: talk about the advantages and give an example.
[2]EDNOTE: is there a way to load documents at URIs in LaTeX?
[3]EDNOTE: integrate with latexml's XMRef in the Math mode.
[4]EDNOTE: describe them

argument that can be used to give metadata about the document. For the moment only the `id` key is used to give an identifier to the `omdoc` element resulting from the LaTeXML transformation.

id

The structure of the document is given by the `omgroup` environment just like in OMDoc. In the LaTeX route, the `omgroup` environment is flexibly mapped to sectioning commands, inducing the proper sectioning level from the nesting of `omgroup` environments. Correspondingly, the `omgroup` environment takes an optional key/value argument for metadata followed by a regular argument for the (section) title of the omgroup. The optional metadata argument has the keys `id` for an identifier, `creators` and `contributors` for the Dublin Core metadata [DUB03]; see [Koh12a] for details of the format. The `short` allows to give a short title for the generated section.

omgroup

id
creators
contributors
short

sTeX automatically computes the sectioning level, from the nesting of `omgroup` environments. But sometimes, we want to skip levels (e.g. to use a subsection* as an introduction for a chapter). Therefore the `omdoc` package provides a variant `blindomgroup` that does not produce markup, but increments the sectioning level and logically groups document parts that belong together, but where traditional document markup relies on convention rather than explicit markup. The `blindomgroup` environment is useful e.g. for creating frontmatter at the correct level. Example 1 shows a typical setup for the outer document structure of a book with parts and chapters. We use two levels of `blindomgroup`:

blindomgroup

- The outer one groups the introductory parts of the book (which we assume to have a sectioning hierarchy topping at the part level). This `blindomgroup` makes sure that the introductory remarks become a "chapter" instead of a "part".
- Th inner one groups the frontmatter[1] and makes the preface of the book a section-level construct. Note that here the `display=flow` on the `omgroup` environment prevents numbering as is traditional for prefaces.

The `\currentsectionlevel` macro supplies the name of the current sectioning level, e.g. "chapter", or "subsection". `\CurrentSectionLevel` is the capitalized variant. They are useful to write something like "In this `\currentsectionlevel`, we will…" in an `omgroup` environment, where we do not know which sectioning level we will end up.

\currentsectionlevel
\CurrentSectionLevel

2.3 Ignoring Inputs

The `ignore` environment can be used for hiding text parts from the document structure. The body of the environment is not PDF or DVI output unless the `showignores` option is given to the `omdoc` class or `package`. But in the generated OMDoc result, the body is marked up with a `ignore` element. This is useful in two situations. For

ignore

showignores

editing One may want to hide unfinished or obsolete parts of a document

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[1] We shied away from redefining the `frontmatter` to induce a blindomgroup, but this may be the "right" way to go in the future.

```
\begin{document}
\begin{blindomgroup}
\begin{blindomgroup}
\begin{frontmatter}
\maketitle\newpage
\begin{omgroup}[display=flow]{Preface}
... <<preface>> ...
\end{omgroup}
\clearpage\setcounter{tocdepth}{4}\tableofcontents\clearpage
\end{frontmatter}
\end{blindomgroup}
... <<introductory remarks>> ...
\end{blindomgroup}
\begin{omgroup}{Introduction}
... <<intro>> ...
\end{omgroup}
... <<more chapters>> ...
\bibliographystyle{alpha}\bibliography{kwarc}
\end{document}
```

Example 1: A typical Document Structure of a Book

narrative/content markup In STEX we mark up narrative-structured documents. In the generated OMDoc documents we want to be able to cache content objects that are not directly visible. For instance in the `statements` package [Koh12d] we use the `\inlinedef` macro to mark up phrase-level definitions, which verbalize more formal definitions. The latter can be hidden by an ignore and referenced by the `verbalizes` key in `\inlinedef`.

2.4 Structure Sharing

`\STRlabel`
`\STRcopy`
The `\STRlabel` macro takes two arguments: a label and the content and stores the the content for later use by `\STRcopy[`$\langle URL\rangle$`]{`$\langle label\rangle$`}`, which expands to the previously stored content. If the `\STRlabel` macro was in a different file, then we can give a URL $\langle URL\rangle$ that lets LaTeXML generate the correct reference.

`\STRsemantics`
The `\STRlabel` macro has a variant `\STRsemantics`, where the label argument is optional, and which takes a third argument, which is ignored in LaTeX. This allows to specify the meaning of the content (whatever that may mean) in cases, where the source document is not formatted for presentation, but is transformed into some content markup format. [5]

EdN:5

2.5 Colors

For convenience, the `omdoc` package defines a couple of color macros for the
`\blue` `color` package: For instance `\blue` abbreviates `\textcolor{blue}`, so that
`\red` `\blue{`$\langle something\rangle$`}` writes $\langle something\rangle$ in blue. The macros `\red` `\green`, `\cyan`,
`...`

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[5]EDNOTE: make an example

`\black` `\magenta`, `\brown`, `\yellow`, `\orange`, `\gray`, and finally `\black` are analogous.

3 Miscellaneous

4 Limitations

In this section we document known limitations. If you want to help alleviate them, please feel free to contact the package author. Some of them are currently discussed in the sTeX TRAC [sTeX].

1. none reported yet

5 Implementation: The OMDoc Class

The functionality is spread over the `omdoc` class and package. The class provides the `document` environment and the `omdoc` element corresponds to it, whereas the package provides the concrete functionality.

`omdoc.dtx` generates four files: `omdoc.cls` (all the code between ⟨*cls⟩ and ⟨/cls⟩), `omdoc.sty` (between ⟨*package⟩ and ⟨/package⟩) and their LaTeXML bindings (between ⟨*ltxml.cls⟩ and ⟨/ltxml.cls⟩ and ⟨*ltxml.sty⟩ and ⟨/ltxml.sty⟩ respetively). We keep the corresponding code fragments together, since the documentation applies to both of them and to prevent them from getting out of sync.

5.1 Class Options

To initialize the `omdoc` class, we declare and process the necessary options.

```
 1 ⟨∗cls⟩
 2 \DeclareOption{showmeta}{\PassOptionsToPackage{\CurrentOption}{metakeys}}
 3 \def\omdoc@class{article}
 4 \DeclareOption{report}{\def\omdoc@class{report}\PassOptionsToPackage{\CurrentOption}{omdoc}}
 5 \DeclareOption{book}{\def\omdoc@class{book}\PassOptionsToPackage{\CurrentOption}{omdoc}}
 6 \DeclareOption{showignores}{\PassOptionsToPackage{\CurrentOption}{omdoc}}
 7 \DeclareOption{showmods}{\PassOptionsToPackage{\CurrentOption}{modules}}
 8 \DeclareOption{extrefs}{\PassOptionsToPackage{\CurrentOption}{sref}}
 9 \DeclareOption*{\PassOptionsToClass{\CurrentOption}{article}}
10 \ProcessOptions
11 ⟨/cls⟩
12 ⟨∗ltxml.cls⟩
13 # -*- CPERL -*-
14 package LaTeXML::Package::Pool;
15 use strict;
16 use LaTeXML::Package;
17 use LaTeXML::Util::Pathname;
18 use Cwd qw(abs_path);
19 DeclareOption('report',sub {PassOptions('omdoc','sty',ToString(Digest(T_CS('\CurrentOption'))))
20 DeclareOption('book',sub {PassOptions('omdoc','sty',ToString(Digest(T_CS('\CurrentOption'))))};
21 DeclareOption('showignores',sub {PassOptions('omdoc','sty',ToString(Digest(T_CS('\CurrentOption
22 DeclareOption('extrefs',sub {PassOptions('sref','sty',ToString(Digest(T_CS('\CurrentOption'))))
23 DeclareOption(undef,sub {PassOptions('article','cls',ToString(Digest(T_CS('\CurrentOption'))))};
24 ProcessOptions();
25 ⟨/ltxml.cls⟩
```

We load `article.cls`, and the desired packages. For the LaTeXML bindings, we make sure the right packages are loaded.

```
26 ⟨∗cls⟩
27 \LoadClass{\omdoc@class}
28 \RequirePackage{etoolbox}
29 \RequirePackage{omdoc}
30 ⟨/cls⟩
31 ⟨∗ltxml.cls⟩
```

```
32 LoadClass('article');
33 RequirePackage('sref');
34 ⟨/ltxml.cls⟩
```

5.2 Setting up Namespaces and Schemata for LaTeXML

Now, we also need to register the namespace prefixes for LaTeXML to use.

```
35 ⟨∗ltxml.cls⟩
36 RegisterNamespace('omdoc'=>"http://omdoc.org/ns");
37 RegisterNamespace('om'=>"http://www.openmath.org/OpenMath");
38 RegisterNamespace('m'=>"http://www.w3.org/1998/Math/MathML");
39 RegisterNamespace('dc'=>"http://purl.org/dc/elements/1.1/");
40 RegisterNamespace('cc'=>"http://creativecommons.org/ns");
41 RegisterNamespace('stex'=>"http://kwarc.info/ns/sTeX");
42 RegisterNamespace('ltx'=>"http://dlmf.nist.gov/LaTeXML");
43 ⟨/ltxml.cls⟩
```

Since we are dealing with a class, we need to set up the document type in the LaTeXML bindings.

```
44 ⟨∗ltxml.cls⟩
45 RelaxNGSchema('omdoc+ltxml',
46        '#default'=>"http://omdoc.org/ns",
47        'om'=>"http://www.openmath.org/OpenMath",
48        'm'=>"http://www.w3.org/1998/Math/MathML",
49        'dc'=>"http://purl.org/dc/elements/1.1/",
50        'cc'=>"http://creativecommons.org/ns",
51       'stex'=>"http://kwarc.info/ns/sTeX",
52        'ltx'=>"http://dlmf.nist.gov/LaTeXML");
53 ⟨/ltxml.cls⟩
```

Then we load the omdoc package, which we define separately in the next section
so that it can be loaded separately[6]

```
54 ⟨∗ltxml.cls⟩
55 RequirePackage('omdoc');
56 ⟨/ltxml.cls⟩
```

5.3 Beefing up the document environment

Now, we will define the environments we need. The top-level one is the document
environment, which we redefined so that we can provide keyval arguments.

document For the moment we do not use them on the LaTeX level, but the document identifier
is picked up by LaTeXML.

```
57 ⟨∗cls⟩
58 \let\orig@document=\document
59 \srefaddidkey{document}
60 \renewcommand{\document}[1][]{\metasetkeys{document}{#1}\orig@document}
```

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[6]EDNOTE: reword

```
61 ⟨/cls⟩
62 ⟨∗ltxml.cls⟩
63 sub xmlBase {
64   my $baseuri = LookupValue('URLBASE');
65   $baseuri =~ s/\/$//g; # No trailing slashes
66   my $baselocal = LookupValue('BASELOCAL');
67   my $name = LookupValue('SOURCEFILE');
68   my ($d,$f,$t);
69   if ($name) {
70     if ( pathname_is_url($name) ) {
71       $name =~ s/^(\w+):\///;
72     }
73     ($d, $f,$t) = pathname_split($name);
74     $t = LookupValue('cooluri') ? '' : ".$t";
75   }
76   else {
77     #Error("expected","SOURCEFILE",undef,"Couldn't locate the current source being processed, S
78     #Tokenize('');
79     # TODO: What is really the right way to work with xml:base?
80     $f = ''; $t='';
81   }
82   my $cdir=q{};
83   if (!pathname_is_url($baselocal)) { # Local conversion
84 $cdir = pathname_relative(abs_path(pathname_cwd()),abs_path($baselocal)) if defined $baselocal;
85     $cdir .= '/';
86   }
87   Tokenize($baseuri.'/'.$cdir.$f.$t);
88 }
89 DefEnvironment('{document} OptionalKeyVals:omdoc',
90         "<omdoc:omdoc "
91     .   "?&KeyVal(#1,'id')(xml:id='&KeyVal(#1,'id')')"
92     .    "(?&Tokenize(&LookupValue('SOURCEBASE'))"
93     .     "(xml:id='&Tokenize(&LookupValue('SOURCEBASE')).omdoc')()) "
94     .    "?&Tokenize(&LookupValue('URLBASE'))"
95     .    "(xml:base='&xmlBase()')()>"
96   .  "#body"
97   ."</omdoc:omdoc>",
98   beforeDigest=> sub { AssignValue(inPreamble=>0); },
99   afterDigest=> sub { $_[0]->getGullet->flush; return; });
100 Tag('omdoc:omdoc', 'afterOpen:late'=>\&insertFrontMatter);
101 ⟨/ltxml.cls⟩
```

6   Implementation: OMDoc Package

6.1   Package Options

The initial setup for LaTeXML:

```
102 ⟨∗ltxml.sty⟩
```

```
103 package LaTeXML::Package::Pool;
104 use strict;
105 use LaTeXML::Package;
106 use Cwd qw(abs_path);
107 ⟨/ltxml.sty⟩
```

We declare some switches which will modify the behavior according to the package options. Generally, an option xxx will just set the appropriate switches to true (otherwise they stay false).[7]

```
108 ⟨*package⟩
109 \DeclareOption{showmeta}{\PassOptionsToPackage{\CurrentOption}{metakeys}}
110 \DeclareOption{showmods}{\PassOptionsToPackage{\CurrentOption}{modules}}
111 \newcount\section@level
112 \newif\ifshow@ignores\show@ignoresfalse
113 \def\omdoc@class{article}\section@level=2
114 \DeclareOption{report}{\def\omdoc@class{report}\section@level=1}
115 \newif\ifclass@book\class@bookfalse
116 \DeclareOption{book}{\def\omdoc@class{book}\section@level=0\class@booktrue}
117 \DeclareOption{showignores}{\show@ignorestrue}
118 \DeclareOption{extrefs}{\PassOptionsToPackage{\CurrentOption}{sref}}
119 \ProcessOptions
120 ⟨/package⟩
121 ⟨*ltxml.sty⟩
122 DeclareOption('report','');
123 DeclareOption('book','');
124 DeclareOption('showignores','');
125 DeclareOption('extrefs','');
126 ⟨/ltxml.sty⟩
```

Then we need to set up the packages by requiring the sref package to be loaded.

```
127 ⟨*package⟩
128 \RequirePackage{sref}
129 \RequirePackage{xspace}
130 \RequirePackage{comment}
131 ⟨/package⟩
132 ⟨*ltxml.sty⟩
133 RequirePackage('sref');
134 RequirePackage('xspace');
135 RequirePackage('omtext');
136 ⟨/ltxml.sty⟩
```

6.2 Document Structure

The structure of the document is given by the omgroup environment just like in OMDoc. The hierarchy is adjusted automatically according to the LaTeX class in effect.

---

[7]EDNOTE: need an implementation for LaTeXML

\currentsectionlevel

```
137 ⟨∗package⟩
138 \def\currentsectionlevel{document\xspace}%
139 \def\Currentsectionlevel{Document\xspace}%
140 ⟨/package⟩
141 ⟨∗ltxml.sty⟩
142 DefMacro('\currentsectionlevel','\@currentsectionlevel\xspace');
143 DefMacro('\Currentsectionlevel','\@Currentsectionlevel\xspace');
144 DefConstructor('\@currentsectionlevel',
145                 "<ltx:text class='omdoc-currentsectionlevel'>section</ltx:text>");
146 DefConstructor('\@CurrentSectionLevel',
147                 "<ltx:text class='omdoc-Currentsectionlevel'>Section</ltx:text>");
148 ⟨/ltxml.sty⟩
```

blindomgroup

```
149 ⟨∗package⟩
150 \newcommand\at@begin@blindomgroup[1]{}
151 \newenvironment{blindomgroup}
152 {\advance\section@level by 1\at@begin@blindomgroup\setion@level}
153 {\advance\section@level by -1}
154 ⟨/package⟩
155 ⟨∗ltxml.sty⟩
156 DefEnvironment('{blindomgroup} OptionalKeyVals:omgroup',
157                 "<omdoc:omgroup layout='invisible'"
158                 . "?&KeyVal(#1,'id')(xml:id='&KeyVal(#1,'id')')()"
159                 . "?&KeyVal(#1,'type')(type='&KeyVal(#1,'type')')()>\n"
160          . "#body\n"
161        . "</omdoc:omgroup>");
162 ⟨/ltxml.sty⟩
```

\omgroup@cl Convenience macro: defines the \currentsectionlevel macro from the keywords in the arguments

```
163 ⟨∗package⟩
164 \newcommand\omgroup@cl[2]{%
165 \def\currentsectionlevel{#1\xspace}%
166 \def\Currentsectionlevel{#2\xspace}}
```

\omgroup@nonum convenience macro: \omgroup@nonum{⟨level⟩}{⟨title⟩} makes an unnumbered sectioning with title ⟨title⟩ at level ⟨level⟩.

```
167 \newcommand\omgroup@nonum[2]{%
168 \ifx\hyper@anchor\@undefined\else\phantomsection\fi%
169 \addcontentsline{toc}{#1}{#2}\@nameuse{#1}*{#2}}
```

\omgroup@num convenience macro: \omgroup@nonum{⟨level⟩}{⟨title⟩} makes numbered sectioning with title ⟨title⟩ at level ⟨level⟩. We have to check the short key was given in the omgroup environment and – if it is use it. But how to do that depends on whether the rdfmeta package has been loaded.

```
170 \newcommand\omgroup@num[2]{\sref@label@id{\omdoc@sect@Name \@nameuse{the#1}}%
171 \ifx\omgroup@short\@empty\@nameuse{#1}{#2}%
```

```
172 \else\@ifundefined{rdfmeta@sectioning}{\@nameuse{#1}[\omgroup@short]{#2}}%
173 {\@nameuse{rdfmeta@#2@old}[\omgroup@short]{#2}}\fi}
174 ⟨/package⟩
```

omgroup

```
175 ⟨∗package⟩
176 \srefaddidkey{omgroup}
177 \addmetakey{omgroup}{creators}
178 \addmetakey{omgroup}{date}
179 \addmetakey{omgroup}{contributors}
180 \addmetakey{omgroup}{type}
181 \addmetakey*{omgroup}{short}
182 \addmetakey*{omgroup}{display}
```

we define a switch for numbering lines and a hook for the beginning of groups:

\at@begin@omgroup   The \at@begin@omgroup macro allows customization. It is run at the beginning of the omgroup, i.e. after the section heading.

```
183 \newif\if@@num\@@numtrue
184 \newcommand\at@begin@omgroup[3][]{}
```

Then we define a helper macro that takes care of the sectioning magic. It comes with its own key/value interface for customization.

```
185 \def\@true{true}
186 \def\@false{false}
187 \addmetakey{omdoc@sect}{name}
188 \addmetakey{omdoc@sect}{Name}
189 \addmetakey[false]{omdoc@sect}{clear}[true]
190 \addmetakey{omdoc@sect}{ref}
191 \addmetakey[false]{omdoc@sect}{num}[true]
192 \newcommand\omdoc@sectioning[3][]{\metasetkeys{omdoc@sect}{#1}%
193 \ifx\omdoc@sect@clear\@true\cleardoublepage\fi%
194 \if@@num% numbering not overridden by frontmatter, etc.
195 \ifx\omdoc@sect@num\@true\omgroup@num{#2}{#3}\else\omgroup@nonum{#2}{#3}\fi
196 \omgroup@cl\omdoc@sect@name\omdoc@sect@Name
197 \else\omgroup@nonum{#2}{#3}\fi}
```

now the environment itself.

```
198 \newenvironment{omgroup}[2][]% keys, title
199 {\metasetkeys{omgroup}{#1}\sref@target%
200 \ifx\omgroup@display\st@flow\@@numfalse\fi
201 \if@frontmatter\@@numfalse\fi
```

now we construct the entries for the table of contents. They depend on whether modules.sty and hyperref.sty are loaded.

```
202 \ifx\imported@modules\@undefined% modules.sty loaded?
203 \ifx\hyper@anchor\@undefined% hyperref.sty loaded?
204 \def\addcontentsline##1##2##3{\addtocontents{##1}{\protect\contentsline{##2}{##3}{\thepage}}}
205 \else\def\addcontentsline##1##2##3{%
206 \addtocontents{##1}{\protect\contentsline{##2}{##3}{\thepage}{\@currentHref}}}
207 \fi% hypreref.sty loaded
208 \else% modules.sty loaded?
```

```
209 \ifx\hyper@anchor\@undefined% hyperref.sty loaded?
210 \def\addcontentsline##1##2##3{%
211 \addtocontents{##1}{\protect\contentsline{##2}{\string\importmodules{\imported@modules}##3}{\th
212 \else\def\addcontentsline##1##2##3{%
213 \addtocontents{##1}{\protect\contentsline{##2}{\string\importmodules{\imported@modules}##3}{\th
214 \fi% hypreref.sty loaded
215 \fi% modules.sty loaded
```

now we only need to construct the right sectioning depending on the value of
`\section@level`.

```
216 \advance\section@level by 1
217 \ifcase\section@level%
218 \or\omdoc@sectioning[name=part,Name=Part,clear,num]{part}{#2}%
219 \or\omdoc@sectioning[name=chapter,Name=Chapter,clear,num]{chapter}{#2}%
220 \or\omdoc@sectioning[name=section,Name=Section,num]{section}{#2}%
221 \or\omdoc@sectioning[name=subsection,Name=Subsection,num]{subsection}{#2}%
222 \or\omdoc@sectioning[name=subsubsection,Name=Subsubsection,num]{subsubsection}{#2}%
223 \or\omdoc@sectioning[name=paragraph,Name=Paragraph,ref=this paragraph]{paragraph}{#2}%
224 \or\omdoc@sectioning[name=subparagraph,Name=Subparagraph,ref=this subparagraph]{paragraph}{#2}%
225 \fi% \ifcase
226 \at@begin@omgroup[#1]\section@level{#2}}% for customization
227 {\advance\section@level by -1}
228 ⟨/package⟩
229 ⟨∗ltxml.sty⟩
230 DefEnvironment('{omgroup} OptionalKeyVals:omgroup {}',
231          "<omdoc:omgroup layout='sectioning'"
232       .  "?&KeyVal(#1,'id')(xml:id='&KeyVal(#1,'id')')()"
233       .  "?&KeyVal(#1,'type')(type='&KeyVal(#1,'type')')()>\n"
234    .  "<dc:title>#2</dc:title>\n"
235   .  "#body\n"
236  .  "</omdoc:omgroup>");
237 ⟨/ltxml.sty⟩
```

6.3 Front and Backmatter

Index markup is provided by the omtext package [Koh12b], so in the omdoc package we only need to supply the corresponding `\printindex` command, if it is not already defined

`\printindex`

```
238 ⟨∗package⟩
239 \providecommand\printindex{\IfFileExists{\jobname.ind}{\input{\jobname.ind}}{}}
240 ⟨/package⟩
241 ⟨∗ltxml.sty⟩
242 DefConstructor('\printindex','<omdoc:index/>');
243 ⟨/ltxml.sty⟩
```

`\tableofcontents` The table of contents already exists in LATEX, so we only need to provide a LATEXML binding for it.

```
244 ⟨∗ltxml.sty⟩
245 DefConstructor('\tableofcontents',
246                  "<omdoc:tableofcontents level='&ToString(&CounterValue('tocdepth'))'/>");
247 ⟨/ltxml.sty⟩
```

The case of the `\bibliography` command is similar

\bibliography

```
248 ⟨∗ltxml.sty⟩
249 DefConstructor('\bibliography{}',"<omdoc:bibliography files='#1'/>");
250 ⟨/ltxml.sty⟩
```

frontmatter `book.cls` already has a `\frontmatter` macro, so we have to redefine the front matter environment in this case.

```
251 ⟨∗package⟩
252 \newif\if@frontmatter\@frontmatterfalse
253 \ifclass@book
254 \renewenvironment{frontmatter}
255 {\@frontmattertrue\pagenumbering{roman}}
256 {\@frontmatterfalse\setcounter{page}{1}\pagenumbering{arabic}}
257 \else
258 \newenvironment{frontmatter}
259 {\@frontmattertrue\pagenumbering{roman}}
260 {\@frontmatterfalse\setcounter{page}{1}\pagenumbering{arabic}}
261 \fi
262 ⟨/package⟩
263 ⟨∗ltxml.sty⟩
264 DefEnvironment('{frontmatter}','#body');
265 ⟨/ltxml.sty⟩
```

6.4 Ignoring Inputs

ignore

```
266 ⟨∗package⟩
267 \ifshow@ignores
268 \addmetakey{ignore}{type}
269 \addmetakey{ignore}{comment}
270 \newenvironment{ignore}[1][]
271 {\metasetkeys{ignore}{#1}\textless\ignore@type\textgreater\bgroup\itshape}
272 {\egroup\textless/\ignore@type\textgreater}
273 \renewenvironment{ignore}{}{}\else\excludecomment{ignore}\fi
274 ⟨/package⟩
275 ⟨∗ltxml.sty⟩
276 DefKeyVal('ignore','type','Semiverbatim');
277 DefKeyVal('ignore','comment','Semiverbatim');
278 DefEnvironment('{ignore} OptionalKeyVals:ignore',
279                  "<omdoc:ignore  %&KeyVals(#1)>#body</omdoc:ignore>");
280 ⟨/ltxml.sty⟩
```

14

6.5   Structure Sharing

\STRlabel   The main macro, it it used to attach a label to some text expansion. Later on, using the \STRcopy macro, the author can use this label to get the expansion originally assigned.

```
281 ⟨∗package⟩
282 \long\def\STRlabel#1#2{\STRlabeldef{#1}{#2}{#2}}
283 ⟨/package⟩
284 ⟨∗ltxml.sty⟩
285 DefConstructor('\STRlabel{}{}', sub {
286   my($document,$label,$object)=@_;
287   $document->absorb($object);
288   $document->addAttribute('xml:id'=>ToString($label)) if $label; });
289 ⟨/ltxml.sty⟩
```

\STRcopy   The \STRcopy macro is used to call the expansion of a given label. In case the
label is not defined it will issue a warning.[8]

```
290 ⟨∗package⟩
291 \newcommand\STRcopy[2][]{\expandafter\ifx\csname STR@#2\endcsname\relax
292 \message{STR warning: reference #2 undefined!}
293 \else\csname STR@#2\endcsname\fi}
294 ⟨/package⟩
295 ⟨∗ltxml.sty⟩
296 DefConstructor('\STRcopy[]{}',"<omdoc:ref xref='#1##2'/>");
297 ⟨/ltxml.sty⟩
```

\STRsemantics   if we have a presentation form and a semantic form, then we can use

```
298 ⟨∗package⟩
299 \newcommand\STRsemantics[3][]{#2\def\@test{#1}\ifx\@test\@empty\STRlabeldef{#1}{#2}\fi}
300 ⟨/package⟩
301 ⟨∗ltxml.sty⟩
302 DefConstructor('\STRsemantics[]{}{}', sub {
303   my($document,$label,$ignore,$object)=@_;
304   $document->absorb($object);
305   $document->addAttribute('xml:id'=>ToString($label)) if $label; });
306 ⟨/ltxml.sty⟩#$
```

\STRlabeldef   This is the macro that does the actual labeling. Is it called inside \STRlabel

```
307 ⟨∗package⟩
308 \def\STRlabeldef#1{\expandafter\gdef\csname STR@#1\endcsname}
309 ⟨/package⟩
310 ⟨∗ltxml.sty⟩
311 DefMacro('\STRlabeldef{}{}', "");
312 ⟨/ltxml.sty⟩
```

---

[8]EDNOTE: MK: we need to do something about the ref!

6.6 Colors

blue, red, green, magenta We will use the following abbreviations for colors from `color.sty`

```
313 ⟨∗package⟩
314 \def\black#1{\textcolor{black}{#1}}
315 \def\gray#1{\textcolor{gray}{#1}}
316 \def\blue#1{\textcolor{blue}{#1}}
317 \def\red#1{\textcolor{red}{#1}}
318 \def\green#1{\textcolor{green}{#1}}
319 \def\cyan#1{\textcolor{cyan}{#1}}
320 \def\magenta#1{\textcolor{magenta}{#1}}
321 \def\brown#1{\textcolor{brown}{#1}}
322 \def\yellow#1{\textcolor{yellow}{#1}}
323 \def\orange#1{\textcolor{orange}{#1}}
324 ⟨/package⟩
```

For the LaTeXML bindings, we go a generic route, we replace `\blue{#1}` by
`{\@omdoc@color{blue}\@omdoc@color@content{#1}}`.

```
325 ⟨∗ltxml.sty⟩
326 sub omdocColorMacro {
327   my ($color, @args) = @_;
328   my $tok_color = TokenizeInternal($color);
329   (T_BEGIN, T_CS('\@omdoc@color'), T_BEGIN, $tok_color->unlist,
330    T_END, T_CS('\@omdoc@color@content'), T_OTHER('['), $tok_color->unlist, T_OTHER(']'),
331    T_BEGIN, $args[1]->unlist, T_END, T_END); }
332 DefMacro('\@omdoc@color{}', sub { MergeFont(color=>$_[1]->toString); return; });#$
333 ⟨/ltxml.sty⟩
```

Ideally, here we will remove the optional argument and have a conversion module
add the attribute at the end (or maybe add it just for math?) or, we can take the
attributes for style from the current font ?

```
334 ⟨∗ltxml.sty⟩
335 DefConstructor('\@omdoc@color@content[]{}',
336   "?#isMath(#2)(<ltx:text ?#1(style='color:#1')()>#2</ltx:text>)");
337 foreach my $color(qw(black gray blue red green cyan magenta brown yellow orange)) {
338   DefMacro("\\".$color.'{}', sub { omdocColorMacro($color, @_); }); }#$
339 ⟨/ltxml.sty⟩
```

6.7 LaTeX Commands we interpret differently

The reinterpretations are quite simple, we either disregard presentational markup
or we re-interpret it in terms of OMDoc.

```
340 ⟨∗ltxml.sty⟩
341 DefConstructor('\newpage','');
342 ⟨/ltxml.sty⟩
```

6.8 Miscellaneous

Some shortcuts that use math symbols but are not mathematical at all; in particular, they should not be translated by LATEXML.

```
343 ⟨∗package⟩
344 \newcommand\hateq{\ensuremath{\hat=}\xspace}
345 \newcommand\hatequiv{\ensuremath{\hat\equiv}\xspace}
346 \newcommand\textleadsto{\ensuremath{\leadsto}\xspace}
347 ⟨/package⟩
348 ⟨∗ltxml.sty⟩
349 DefMacro('\hateq','\@hateq\xspace');
350 DefConstructor('\@hateq',"\x{2259}");
351 DefMacro('\hatequiv','\@hatequiv\xspace');
352 DefConstructor('\@hatequiv',"\x{2A6F}");
353 DefMacro('\textleadsto','\@textleadsto\xspace');
354 DefConstructor('\@textleadsto',"\x{219D}");
355 ⟨/ltxml.sty⟩
```

6.9 Leftovers

```
356 ⟨∗package⟩
357 \newcommand\baseURI[2][]{}
358 ⟨/package⟩
359 ⟨∗ltxml.sty⟩
360 DefMacro('\baseURI []Semiverbatim', sub {
361     my $baselocal = ToString(Expand($_[1]));
362     $baselocal = abs_path($baselocal) unless $baselocal=~/^(\w+):\/\//;
363     AssignValue('BASELOCAL'=>$baselocal,'global');
364     AssignValue('URLBASE'=>ToString(Expand($_[2])),'global');
365  });
366 ⟨/ltxml.sty⟩
```

EdN:9

[9] and finally, we need to terminate the file with a success mark for perl.

```
367 ⟨ltxml.sty | ltxml.cls⟩1;
```

---

[9]EDNOTE: this should be handled differently, omdoc.sty should include url and give a new macro for it, which we then use in omdoc

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