

`smglom.cls/sty`: Semantic Multilingual Glossary for Math

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Abstract

The `smglom` 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 glossary entries.

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1 Introduction

2 The User Interface

2.1 Package and Class Options

`smglom.cls` accepts all options of the `omdoc.cls` and `article.cls` and just passes them on to these.

3 Implementation: The SMGloM Class

3.1 Class Options

To initialize the `smglom` class, we pass on all options to `omdoc.cls`

```
1 <*cls>
2 \DeclareOption*{\PassOptionsToClass{\CurrentOption}{omdoc}}
3 \ProcessOptions
4 </cls>
5 <*ltxml.cls | ltxml.sty>
6 # -*- CPERL -*-
7 package LaTeXML::Package::Pool;
8 use strict;
9 use warnings;
10 use LaTeXML::Package;
11
12 DeclareOption(undef,sub {PassOptions('omdoc','cls',ToString(Digest(T_CS('\CurrentOption')))); }
13 ProcessOptions();
14 </ltxml.cls | ltxml.sty>
```

We load `omdoc.cls`, and the desired packages. For the L^AT_EXML bindings, we make sure the right packages are loaded.

```
15 <*cls>
16 \LoadClass{omdoc}
17 \RequirePackage{smglom}
18 </cls>
19 <*sty>
20 \RequirePackage{amstext}
21 \RequirePackage{modules}
22 \RequirePackage{dcm}
23 \RequirePackage{statements}
24 \RequirePackage{sproof}
25 \RequirePackage{cmath}
26 \RequirePackage[langfiles]{smultiling}
27 \RequirePackage{presentation}
28 \RequirePackage{amsfonts}
29 </sty>
30 <*ltxml.cls>
31 LoadClass('omdoc');
32 RequirePackage('smglom');
33 </ltxml.cls>
34 <*ltxml.sty>
35 RequirePackage('amstext');
36 RequirePackage('modules');
37 RequirePackage('dcm');
38 RequirePackage('statements');
39 RequirePackage('sproof');
40 RequirePackage('cmath');
41 RequirePackage('smultiling',options => ['langfiles']);
42 RequirePackage('presentation');
```

```

43 \RequirePackage('amsfonts');
44 \ltxml.sty

```

3.2 For Module Definitions

`\gimport` Just a shortcut, we have a starred and unstarred version, the first one is conservative. For example, if we execute:

```
\gimport[smglom/numberfields]{naturalnumbers}
```

First we are redirected to `\@gimport@nostar`, we store the `smglom/numberfields` (*the repo's path*) in `\@test`, then store `\mh@currentrepos` (*current directory*) in `\mh@repos`. If no repo's path is offered, that means the module to import is under the same directory, so we let `repos=\mh@repos` and pass bunch of parameters to `\importmhmodule`, which is defined in `module.sty`. If there's a repo's path, then we let `repos=<the repo's path>`. Finally we use `\mhcurrentrepos` (defined in `module.sty`) to change the `\mh@currentrepos`.

```

45 \<sty>
46 \def\gimport{\@ifstar\@gimport@star\@gimport@nostar}%
47 \newcommand\@gimport@star[2][{}]{%
48   \def\@test{#1}%
49   \edef\mh@repos{\mh@currentrepos}%
50   \ifx\@test\@empty%
51     \importmhmodule[conservative,repos=\mh@repos,ext=tex,path=#2]{#2}%
52   \else%
53     \importmhmodule[conservative,repos=#1,ext=tex,path=#2]{#2}%
54   \fi%
55   \mhcurrentrepos{\mh@repos}%
56   \ignorespaces%
57 }%
58 \newcommand\@gimport@nostar[2][{}]{%
59   \def\@test{#1}%
60   \edef\mh@repos{\mh@currentrepos}%
61   \ifx\@test\@empty%
62     \importmhmodule[repos=\mh@repos,ext=tex,path=#2]{#2}%
63   \else%
64     \importmhmodule[repos=#1,ext=tex,path=#2]{#2}%
65   \fi%
66   \mhcurrentrepos{\mh@repos}%
67   \ignorespaces%
68 }%
69 \</sty>
70 \ltxml.sty>
71 \DefMacro(' \gimport', ' \@ifstar\@gimport@star\@gimport@nostar');
72 \DefMacro(' \@gimport@star[{}]', ' \gimport[conservative=true,ext=tex,path=#2]{#1}{#2}');
73 \DefMacro(' \@gimport@nostar[{}]', ' \gimport[conservative=false,ext=tex,path=#2]{#1}{#2}');
74 \DefConstructor(' \gimport OptionalKeyVals:importmhmodule {}{}',

```

```

75     "<omdoc:imports "
76     . "from='?&GetKeyVal(#1,'load')(&canonical_omdoc_path(&GetKeyVal(#1,'load'))())\##2' "
77     . "conservative='&GetKeyVal(#1,'conservative')'"/>",
78   afterDigest => \&gimportI);

```

To make this work we need a sub that sets the respective values.

```

79 sub gimportI {
80   my ($stomach,$whatsit) = @_;
81   my $keyval = $whatsit->getArg(1);
82   my $repos = ToString($whatsit->getArg(2));
83   my $name = $whatsit->getArg(3);
84   if ($repos) {
85     $keyval->setValue('repos',$repos); }
86   else {
87     $keyval->setValue('repos',LookupValue('current_repos')); }
88   # Mystery: Why does $whatsit->setArgs($keyval,$name) raise a warning for
89   #           "odd numbers" in hash assignment? Workaround for now!
90   $$whatsit{args}[1] = $name; # Intention: $whatsit->setArg(2,$name);
91   undef $$whatsit{args}[2]; # Intention: $whatsit->deleteArg(3);
92   importMHmoduleI($stomach,$whatsit);
93   return; }##$
94 </ltxml.sty>

```

guse just a shortcut

```

95 <*sty>
96 \newcommand\guse[2][]{%
97   \def\@test{#1}%
98   \edef\mh@@repos{\mh@currentrepos}%
99   \ifx\@test\@empty%
100     \usemhmodule[repos=\mh@@repos,ext=tex,path=#2]{#2}%
101   \else%
102     \usemhmodule[repos=#1,ext=tex,path=#2]{#2}%
103   \fi%
104   \mhcurrentrepos{\mh@@repos}%
105   \ignorespaces%
106 }%
107 </sty>
108 <*ltxml.sty>
109 DefMacro('\guse[]{}','\g@use[ext=tex,path=#2]{#1}{#2}');
110 DefConstructor('\g@use OptionalKeyVals:importmhmodule {} {}',
111   "<omdoc:uses from='?&GetKeyVal(#1,'load')(&canonical_omdoc_path(&GetKeyVal(#1,'load'))())\##2' "
112   afterDigest => \&gimportI);
113 </ltxml.sty>

```

gadopt just a shortcut

```

114 <*sty>
115 \newcommand\gadopt[2][]{%
116   \def\@test{#1}%
117   \edef\mh@@repos{\mh@currentrepos}%
118   \ifx\@test\@empty%

```

```

119 \adoptmhmodule[repos=\mh@@repos,ext=tex,path=#2]{#2}%
120 \else%
121 \adoptmhmodule[repos=#1,ext=tex,path=#2]{#2}%
122 \fi%
123 \mhcurrentrepos{\mh@@repos}%
124 \ignorespaces%
125 }%
126 \</sty>
127 \<*lxml.sty>
128 DefMacro('gadopt[]{}','g@adopt[ext=tex,path=#2]{#1}{#2}');
129 DefConstructor('g@adopt OptionalKeyVals:importmhmodule {} {}',
130 "<omdoc:adopts from='?&GetKeyVal(#1,'load')(&canonical_omdoc_path(&GetKeyVal(#1,'load')))>\#",
131 afterDigest => \&gimportI);
132 \</lxml.sty>

```

*nym

```

133 \<*sty>
134 \newcommand\hypernym[3][]{\if@importing\else\par\noindent #2 is a hypernym of #3\fi}%
135 \newcommand\hyponym[3][]{\if@importing\else\par\noindent #2 is a hyponym of #3\fi}%
136 \newcommand\meronym[3][]{\if@importing\else\par\noindent #2 is a meronym of #3\fi}%
137 \</sty>
138 \<*lxml.sty>
139 DefConstructor('hypernym [] {}{}', "");
140 DefConstructor('hyponym [] {}{}', "");
141 DefConstructor('meronym [] {}{}', "");
142 \</lxml.sty>

```

EdN:1

\MSC to define the Math Subject Classification, ¹

```

143 \<*sty>
144 \newcommand\MSC[1]{\if@importing\else MSC: #1\fi}%
145 \</sty>
146 \<*lxml.sty>
147 DefConstructor('MSC{}', "");
148 \</lxml.sty>

```

3.3 For Language Bindings

Here we adapt the `smultiling` functionality to the special situation, where the module and file names are identical by design.

gviewsig The `gviewsig` environment is just a layer over the `viewsig` environment with the keys suitably adapted.

```

149 \<lxml.sty>RawTeX('
150 \<*sty | lxml.sty>
151 \newenvironment{gviewsig}[4][]{%
152 \def\test{#1}%
153 \ifx\@test\@empty%

```

¹EdNOTE: MK: what to do for the LaTeXML side?

```

154 \begin{mhviewsig}[frompath=#3,topath=#4]{#2}{#3}{#4}%
155 \else%
156 \begin{mhviewsig}[frompath=#3,topath=#4,#1]{#2}{#3}{#4}%
157 \fi%
158 }{%
159 \end{mhviewsig}%
160 }%

```

gviewnl The **gve** environment is just a layer over the **viewnl** environment with the keys suitably adapted.

```

161 \newenvironment{gviewnl}[5][[]]{%
162 \def\@test{#1}\ifx\@test\@empty%
163 \begin{mhviewnl}[frompath=#4,topath=#5]{#2}{#3}{#4}{#5}%
164 \else%
165 \begin{mhviewnl}[#1,frompath=#4,topath=#5]{#2}{#3}{#4}{#5}%
166 \fi%
167 }{%
168 \end{mhviewnl}%
169 }%
170 \</sty | ltxml.sty>
171 \<ltxml.sty>');

```

3.4 Authoring States

We add a key to the module environment.

```

172 \<sty>
173 \addmetakey{module}{state}%
174 \</sty>
175 \<ltxml.sty>
176 DefKeyVal('modnl','state','Semiverbatim');
177 \</ltxml.sty>

```

3.5 Shadowing of repositories

\repos@macro **\repos@macro** parses a GitLab repository name $\langle group \rangle / \langle name \rangle$ and creates an internal macro name from that, which will be used

```

178 \<sty>
179 \def\repos@macro#1/#2;{#1@shadows@#2}%

```

\shadow **\shadow** $\{\langle orig \rangle\}\{\langle fork \rangle\}$ declares a that the private repository $\langle fork \rangle$ shadows the MathHub repository $\langle orig \rangle$. Internally, it simply defines an internal macro with the shadowing information.

```

180 \def\shadow#1#2{\@namedef{\repos@macro#1}{#2}}%
181 \</sty>
182 \<ltxml.sty>
183 DefConstructor('\shadow{}{}','');
184 \</ltxml.sty>

```

`\MathHubPath` `\MathHubPath{⟨repos⟩}` computes the path of the fork that shadows the MathHub repository `⟨repos⟩` according to the current `\shadow` specification. The computed path can be used for loading modules from the private version of `⟨repos⟩`.

```

185 ⟨*sty⟩
186 \def\MathHubPath#1{\@ifundefined{\repos@macro#1;}{#1}{\@nameuse{\repos@macro#1;}}}%
187 ⟨/sty⟩
188 ⟨*ltxml.sty⟩
189 DefConstructor('MathHubPath{','');
190 ⟨/ltxml.sty⟩

and finally, we need to terminate the file with a success mark for perl.
191 ⟨ltxml.sty | ltxml.cls⟩1;

```