The metainfo $package^*$

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Abstract

This file describes the $\mathsf{metainfo}$ package that typesets only special comments of a T_EX file.

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1 Introduction

Suppose you write a text and include some annotations for yourself that are not printed, i.e. an explanation of a pun or a short summary of the current chapter in order to be able to later create a summary of the whole text. Then it would be nice to be able to extract these annotations and typeset them separately. This package provides the macro **\typesetmetainfo** to typeset only these annotations (herein called 'metainfo', as they are information about the information contained in the text).

2 Macros

\typesetmetainfo

Usage: \typesetmetainfo { $\langle file \rangle$ }.

Typesets the metain fo of the TEX file $\langle file\rangle.$ Anything not a metain fo—text, preamble—is skipped.

3 Formatting

3.1 Metainfo after a heading

Any comments following a line with a heading are considered a metainfo and are typeset as if they were normal text. The first line that does not begin with a percent sign finishes the metainfo.

A heading is started by a macro defined in \\mi@@MIbeginnings. Normally this macro contains \chapter, \section, \subsection, and \subsubsection, but you can of course redefine it.

The heading itself is typeset as well, before the metainfo, resulting all metainfo being typeset using the outline of the normal document. Note that when writing a heading, some restriction apply:

- 1. The heading macro must be at the beginning of the line.
- 2. Any parameters of the macro must be on the same line. (parameters split over several lines might work, but they are not guaranteed to)

3.2 Local metainfo

There is another way to include metainfo in a document, that is as a *local metainfo*. A local metainfo is a metainfo not following a heading; instead they can appear anywhere in the text. They start with a double percent sign at the beginning of the line (%%); the line itself is then typeset as a metainfo as well as all the following lines beginning with a % (just as a metainfo following a heading). The first line that does not begin with a percent sign finishes the local metainfo.

You can format a local metainfo using three macros. (see section 6.3 on page 5 for an example how to customize them.)

- 1. \mi@OfirstlocalMItext: The contents of this macro is inserted before the first local metainfo of a chapter.
- 2. \mi@@lastlocalMItext: The contents of this macro is inserted after the last local metainfo of a chapter.
- 3. \mi@@everylocalMItext: The contents of this macro is inserted before every local metainfo.

Note If you change these macros in your document preamble or your main document opposed to a package file, you must surround them with \makeatletter and \makeatother, as shown in the example below.

4 Package options

The following package options exist:

- **compactheadings** Changes the section headings to be more compact in order to save some space.
- indexshorthand Provides shorthands for indexing. $\{\langle text \rangle\}\$ indexes and typesets $\langle text \rangle$, $\{\langle text \rangle\}\$ only indexes it.¹ For indexing, the standard index macro index is used.

These macros only work in text mode; in math mode, $\hat{}$ is a superscript as predefined in LAT_FX.

listlocalmetainfo Changes the macros \mi@@firstlocalMItext, \mi@@lastlocalMItext
 and \mi@@everylocalMItext (described in the section above) to itemize
 the local metainfo.

5 Driver files

In order to typeset only the metainfo of a document, a special driver file is needed. This driver loads the packages necessary for typesetting the metainfo (at least the package metainfo) and inputs the document to be typeset using \typesetmetainfo.

 $^{^1\}mathrm{These}$ shorthands have been inspired by Donald E. Knuth's own index macros used for the TEXbook.

Note No package of the document processed using \typesetmetainfo is loaded, as the \usepackage macros are skipped. The same is true for any definitions in the document preamble or elsewhere: They are skipped, so if the metainfo relies on these definitions, they have to be included in the driver as well.

6 Examples

6.1 Example driver file

The following driver file typesets the metain fo of the TEX file 'example.tex' using compact headings:

```
\documentclass{book}
\usepackage[compactheadings]{metainfo}
```

```
\begin{document}
 \typesetmetainfo{example}
 \end{document}
```

6.2 Example document

If we save the following file as 'example.tex' and process it using the driver file in the example above ...

```
\documentclass{minimal}
\usepackage{testpackage}
```

\begin{document}

\chapter{Chapter 1}
% Metainfo for chapter 'Chapter 1'

\section{Section 1}
% Metainfo for section 'Section 1'

This is some text.

```
\chapter{Chapter 2}
\section{Section 2}
% Metainfo for section 'Section 2'
```

This is some more text.

% Local metainfo. This metainfo is a bit longer, but only % a little bit.

```
\section{Section 3}
% Metainfo for section 'Section 3'
```

\end{document}

 \dots this results in:²

Chapter 1 Metainfo for chapter 'Chapter 1'

Section 1 Metainfo for section 'Section 1'

Chapter 2 Section 2 Metainfo for section 'Section 2'

Annotations: Local metainfo. This metainfo is a bit longer, but only a little bit.

Section 3

Metainfo for section 'Section 3'

6.3 Example local metainfo formatting

The following macros prefix local metainfo with 'Annotations:' in bold typeface and typesets the local metainfo in an itemize environment:³

```
\makeatletter
\def\mi@@firstlocalMItext{%
  \addvspace{\baselineskip}%
  \noindent\textbf{Annotations:}%
  \begin{itemize}%
}
\def\mi@@lastlocalMItext{%
  \end{itemize}%
}
\def\mi@@everylocalMItext{%
  \item\relax%
}
\makeatother
```

7 Notes/Limitations

• Any text or macros on the same line as a heading are processed as well, immediately after the heading. Thus you can type \section{foo}\label{sec:foo}

 $^{^2 \}rm Approximately, as the real formatting will differ slightly from the text typeset here. <math display="inline">^3 \rm Similar$ to the package option <code>listlocalmetainfo</code>, described in section 4 on page 3 does.

and refer to this section inside a metainfo using the label sec:foo.

• The document included using \typesetmetainfo must be a valid LATEX document insofar as that it must contain a document environment, because $\end{document}$ serves as the ending delimiter for typesetting the metainfo.

That also means that any metainfo following \end{document} is not typeset.

8 Implementation

8.1 Main environments and macros

\typesetmetainfo Usage: \typesetmetainfo { $\langle file \rangle$ }.

Typesets the metainfo of a document.

1 \newcommand{\typesetmetainfo}[1]{%

- 2 \bgroup%
- 3 \mi@activenewline%
- 4 \mi@emptyactivepercent%
- 5 \mi@otherbraces%

We provide support for the standard LATEX verbatim environment:

- 7 \let\mi@old@verbatim\@verbatim%
- 8 \def\@verbatim{%
- 9 \mi@old@verbatim%
- 10 \mi@verbatimnewline%
- 11 **}%**

We use the original T_EX definition of \input (saved by I^AT_EX in \CCinput), because we must continue with our special processing immediately after $\langle file \rangle$ has been opened. This is a job for the original T_EX \input, as it simply switches the input stream to $\langle file \rangle$ and expands to nothing.

The \relax delimits the filename.

```
12 \expandafter\mi@skiplines\@@input#1\relax%
```

```
13 \egroup%
```

14 }

8.2 Package customization

\mi@@MIbeginnings	Stores all the macros that can begin a metainfo.		
	$15 \ \texttt{Mi0@MIbeginnings} \ \texttt{Chapter} \ \texttt{section} \ \texttt{subsection} \ subse$		
\mi@@firstlocalMItext	Stores the text inserted before the first local metainfo.		
	<pre>16 \def\mi@@firstlocalMItext{\textbf{Annotations:}\par\noindent}</pre>		
\mi@@lastlocalMItext	Stores the text inserted after the last local metainfo.		
	17 \def\mi@@lastlocalMItext{}		

\mi@@everylocalMItext Stores the text inserted before every local metainfo.

18 \def\mi@@everylocalMItext{}

8.3 Package options

8.3.1 Headings

We provide the possibility of changing the headings to a more compact formatting:

```
19 \DeclareOption{compactheadings}{%}
20
                  21
                           \def\chapter{\@startsection{chapter}{0}{\z@}{-2\baselineskip}%
22
                                                      {\baselineskip}{\normalfont\normalsize\bfseries}}%
23
                 7%
                  24
                                             {\baselineskip}{\normalfont\normalsize\bfseries}}%
25
                  \label{eq:lineskip} $$ def subsection{\ubsection{z}{z}{z}{z}}{z}\
26
27
                                             {\baselineskip}{\normalfont\normalsize\bfseries}}%
                  \label{lem:linear} $$ \eqref{lem:linear} $
28
29
                                             {-2\baselineskip}{\baselineskip}%
                                             {\normalfont\normalsize\bfseries}}%
30
31 }
```

8.3.2 Index shorthand

\ifmi@indexmacros

true, if index shorthands specified using the package option indexshorthand are used, otherwise false:

> 32 \newif\ifmi@indexmacros 33 \mi@indexmacrosfalse

We provide the possibility of using the shorthand ^ for an index entry that is typeset, and ^^ for an index entry that is not typeset:

34 \DeclareOption{indexshorthand}{% \mi@indexmacrostrue% 35

We save the original meaning of ^. We do not simply use ^ in the \mi@hat...-\mi@hat macros, because then we would assume that ^ is not already an active character before our catcode change (which we will make in \typesetmetainfo). Normally, ^ has catcode 7 (superscript), but if is was active (i.e. because of another package changing `), we would store an active ` in the definition of the \mi@hat...-macros. When later used this ^ would point to our macro \mi@hat, resulting in an endless loop. So we save the original meaning of ^ instead using \let, which, if ^ is active, would save the macro ^ would have been \let to.

```
\let\mi@@@hat^%
36
```

Main macro for indexing and first step in deciding how to index: \mi@hat

• Math mode: Expand to the original definition of ^.

• Otherwise: Check the next token using \mi@hat@.

```
37 \def\mi@hat{%
38 \ifmmode%
39 \expandafter\mi@@@hat%
40 \else%
41 \expandafter\futurelet\expandafter\@tempa\expandafter\mi@hat@%
42 \fi%
43 }
```

- \mi@hat@ Second step in deciding how to index. We know that we are not in math mode. The token following the hat has been prefetched and stored in \@tempa. (it has not been read yet)
 - A second hat (^): Check the next token using \mi@hat@twohats.
 - Opening brace: Typeset the index word and index it using it \mi@indextypeset.
 - Otherwise: Display an error, as ^^ must be followed by a parameter in braces.

```
\def\mi@hat@{%
44
      \ifx\@tempa\mi@hat%
45
        \expandafter\mi@hat@twohats%
46
47
      \else\ifx\@tempa\bgroup%
        \expandafter\expandafter\expandafter\mi@indextypeset%
48
49
      \else%
        \mi@hat@errbrace%
50
      \fi\fi%
51
    }
52
```

\mi@hat@twohats First step in deciding how to index a word not typeset. We know we have two hats in a row (^^), but the second hat is not read yet (only prefetched using \futurelet). Therefore we gobble it using #1.

```
53 \def\mi@hat@twohats#1{%
54 \futurelet\@tempa\mi@hat@twohats@%
55 }
```

\mi@hat@twohats Second step in deciding how to index a word not typeset. We know we have two hats in a row, both read. The token following the two hats has been prefetched and stored in \@tempa.

Note that we could skip this step and simpy expand to \index, letting \index take care that a proper parameter follows.

```
56 \def\mi@hat@twohats@{%
57 \ifx\@tempa\bgroup%
58 \expandafter\index%
59 \else%
60 \mi@hat@errbrace%
61 \fi%
62 }
```

```
Usage: \min(indextypeset \{(word)\}). Typesets (word) and indexes it using
\mi@indextypeset
                  \index.
                  63
                      \def\mi@indextypeset#1{%
                  64
                        #1\index{#1}%
                     }
                  65
\mi@hat@errbrace
                 Error handling when a ^ or ^ ^ is not followed by a left brace.
                      \def\mi@hat@errbrace{%
                  66
                        \PackageError{metainfo}{'\string' or '\string' not %
                  67
                  68
                                    followed by a left brace}\@ehc%
                     }
                  69
                     End of \DeclareOption{index}:
                  70 }
                  8.3.3 Other options
                  71 \DeclareOption{listlocalmetainfo}{%
```

```
\def\mi@@firstlocalMItext{%
72
73
      \begin{itemize}%
74
    }%
75
    \def\mi@@lastlocalMItext{%
76
      \end{itemize}%
77
    }%
    \def\mi@@everylocalMItext{%
78
79
      \item\relax%
80
    }%
81 }
```

82 \ProcessOptions\relax

8.4 Internal environments and macros

8.4.1 General definitions and flags

Strategy for dealing with catcode changes At the beginning of the processing, the catcodes are changed as follows:

- M 13 (active), set in \mi@activenewline
- % 13, set in \mi@emptyactivepercent
- { 12 (other), set in \mi@otherbraces
- } 12, set in \min
- 13, optionally set in \mi@activehat

If any macro changes the catcodes of these characters, it must reset them to these values after processing. If any macro needs the braces { and } for parameter grouping, it should use the macro \mi@normalbraces to change the catcodes accordingly.

\ifmi@firstlocalMI true if this is the first local metainfo, otherwise false. Used to insert \mi@@firstlocalMItext and \mi@@lastlocalMItext.

```
83 \newif\ifmi@firstlocalMI
84 \mi@firstlocalMItrue
```

8.4.2 Modes

Three modes of processing exist:

Skipping text Text is skipped line after line. If two percent signs are found at the beginning of a new line, a local metainfo is begun and the mode changed to 'Typesetting a metainfo'.

Main macro: \mi@skiplines.

- Beginning metainfo The appropriate heading is typeset and the remaining line of text skipped. The mode is then changed to 'Typesetting a metainfo'. Main macro: \mi@checkbeginMI.
- **Typesetting a metainfo** The text is typeset. If a line does not start with a percent sign, the metainfo is done. The mode is then changed to 'Skipping text'.

Main macro: \mi@typesetMI.

- \mi@skiplines Main macro. Skips lines and checks the first token of a line (stored in #1) for two special cases:
 - 1. A percent sign %: We check if it starts a local metainfo using \mi@checkbeginlocalMI.
 - 2. A control sequence: We check if it starts a new metainfo using \mi@checkbeginMI.

```
85 \def\mi@skiplines#1{%
```

```
86 \ifx#1\mi@percentempty%
```

A percent sign: We check if it starts a local metainfo.

```
87 \expandafter\mi@checkbeginlocalMI%
```

```
88 \else\ifcat\noexpand#1\relax%
```

A control sequence: We check if it starts a new metainfo.

```
89 \expandafter\expandafter\mi@checkbeginMI%
```

90 \else%

Anything else: We skip it and the remaining line of text. Note that it could be a line ending $(^{M})$, so it may be possible that we gobble only #1, which will be re-inserted into the stream below. That way we do not have to check if #1 is a line ending.

91 \expandafter\expandafter\mi@gobbletolineend% 92 \fi\fi%

We always insert the first token of a line back into the stream, even though it is not necessary for \mi@checkbeginlocalMI. But as normally most of the lines of a text will be skipped, we optimize for this case.

93 **#1%** 94 }

```
The following macros require ^^M to be active:
                           95 \bgroup
                           96 \catcode '\^^M=\active%
           \mi@typesetMI
                          Prepares the typesetting of a metainfo.
                           97 \gdef\mi@typesetMI{%
                               \mi@normalbraces%
                           98
                              Every CR we check if the next line continues the metainfo using \mi@typesetMI@checkend.
                               \let^^M\mi@typesetMI@checkend%
                           99
                              Now we start typesetting the text. We let TFX take completely control instead
                           of reading one line after the other; we will regain control at the end of each line
                           using our redefinition of ^^M.
                          100
                               \ignorespaces%
                          101 }
                           Called at a carriage return. If the token after the CR is equals to \mi@percentempty,
 \mi@typesetMI@checkend
                           the next line starts with a %, thus continuing the metainfo. Otherwise, the metainfo
                           is finished.
                          102 \long\gdef\mi@typesetMI@checkend#1{%
                          103
                               \ifx#1\mi@percentempty%
                               The next line continues the comment. We check for an empty line:
                                  \expandafter\mi@typesetMI@checkend@%
                          104
                               \else%
                          105
                               The next line finishes the comment:
                                  \mi@otherbraces%
                          106
                                  \let^^M\@empty%
                          107
                                  \expandafter\mi@skiplines\expandafter#1%
                          108
                          109
                               \fi%
                          110 }
                           Checks if a ^^M (CR) follows immediately after the %. Then we insert a \par. Note
\mi@typesetMI@checkend@
                           that any spaces between the % and the CR are automatically skipped by using a
                           non-delimited parameter.
                          111 \long\gdef\mi@typesetMI@checkend@#1{%
                               \ifx#1\mi@typesetMI@checkend%
                          112
                                  \par\expandafter\mi@typesetMI@checkend%
                          113
                          114
                               \else%
                               We assume the line is \% \langle text \rangle instead of \% \langle text \rangle, thus we insert back a space
                           that was skipped before:
                          115
                                  \space%
                          116
                                  \expandafter#1%
                          117
                               \fi%
```

118 }

 \millipsilon Usage: \millipsilon Usage: \millipsilon

First step in the check for the begin of a metainfo: Checks if $\langle cs \rangle$ is a control sequence that can begin a metainfo.

119 \gdef\mi@checkbeginMI#1{%

Handle \end:

- 120 $\ 120$
- 121 \expandafter\mi@checkdocumentend%

122 **\else%**

We check if $\langle cs \rangle$ is a relevant control sequence. (these are stored in $\mbox{mi@CMIbeginnings}$) Then we use $\mbox{mi@checkbeginMI@ to evaluate the result:}$

```
123 \def\@tempa##1#1##2\@nil{\mi@checkbeginMI@{##2}#1}%
124 \expandafter\expandafter\expandafter\@tempa%
125 \expandafter\mi@@MIbeginnings\expandafter#1%
126 \expandafter\@nil%
127 \fi%
128 }
```

\mi@checkbeginMI@ Support macro for \mi@checkbeginMI. Checks if #2 is a relevant control sequence by checking if #1 is empty (false) or not (true).

```
129 \gdef\mi@checkbeginMI@#1#2{%
130 \ifx^^M#1^^M%
```

Not a relevant control sequence: Skip till the end of the line.

131 \expandafter\mi@gobbletolineend%

132 **\else%**

A relevant control sequence. If there has been any local metainfo before this macro, we finish it by inserting \mi@@lastlocalMItext:

133 \ifmi@firstlocalMI\else\mi@@lastlocalMItext\fi%

We restore all character catcodes except for M , which we use to continue processing after the control sequence in question has been executed: (this is the reason a heading must appear on a single line, as otherweise M is executed more than once)

```
134 \let^M\mi@checkbeginMI@@%
135 \mi@normalbraces%
136 \mi@normalpercent%
```

In any case, a local metainfo following this macro is the first, so we set the flag accordingly:

```
        137
        mi@firstlocalMItrue%

        138
        \expandafter#2%

        139
        \fi%

        140
        }
```

```
\mi@checkbeginMI@ Support macro for \mi@checkbeginMI@. Is called via ^^M at the end of a line.
                        141 \gdef\mi@checkbeginMI@@{%
                             \let^^M\@empty%
                       142
                             \mi@otherbraces%
                       143
                             \mi@emptyactivepercent%
                        144
                             \mi@checkbeginMI@@@%
                        145
                        146 }
                       147 \egroup
                        Support macro for \mi@checkbeginMI and the second step in the check for the
 \mi@checkbeginMI@@@
                        begin of a metainfo: Checks if the line after the control sequence begins with a
                        percent sign.
                        148 \def\mi@checkbeginMI@@@#1{%
                             \ifx#1\mi@percentempty%
                        149
                            A percent sign: It starts a metainfo. Change to metainfo.
                        150
                                \par%
                               \expandafter\mi@typesetMI%
                        151
                             \else%
                       152
                            Anything else: No metainfo follows. Ignore it.
                               \expandafter\mi@skiplines\expandafter#1%
                       153
                        154
                             \fi%
                        155 }
                        Usage: \mbox{mi@checkbeginlocalMI} \langle dummy \rangle \langle next \ token \rangle.
\mi@checkbeginlocalMI
                            \langle dummy \rangle is the result of an optimization of \min@skiplines. (see above)
                        156 \def\mi@checkbeginlocalMI#1#2{%
                        157
                             \ifx#2\mi@percentempty%
                            A percent sign: It starts a local metainfo. Change to metainfo.
                               \par%
                       158
                               \ifmi@firstlocalMI\mi@@firstlocalMItext\fi%
                        159
                        160
                               \mi@@everylocalMItext%
                            We have begun to typeset the local metainfo, therefore we take note that any
                        local metainfo following this one is not the first.
                        161
                               \mi@firstlocalMIfalse%
                        162
                                \expandafter\mi@typesetMI%
                        163
                             \else%
                            Anything else: No, it is just a simple comment. Ignore it.
                               \expandafter\mi@gobbletolineend\expandafter#2%
                        164
                        165
                             \fi%
                        166 }
                        Checks if the \end just read ends the document environment.
\mi@checkdocumentend
                        167 \def\mi@checkdocumentend{%
```

We change the catcodes of braces back to normal in order to get the name of the environment as the only parameter of \mi@checkdocumentend@ and not only the opening brace.

```
168 \mi@normalbraces%
169 \mi@checkdocumentend@%
170 }
```

\mi@checkdocumentend@ Support macro for \mi@checkdocumentend.

171 \def\mi@checkdocumentend@#1{%

```
172 \def\@tempa{#1}%
```

173 \ifx\@tempa\mi@textdocument%

If there has been any local metainfo before this macro, we finish it by inserting \mi@ClastlocalMItext:

```
174 \ifmi@firstlocalMI\else\mi@@lastlocalMItext\fi%
```

175 \expandafter\mi@gobbletolineend@any\expandafter\endinput%
176 \else%

As are not done yet, we better set the catcode of braces to 'letter':

177	\mi@otherbraces%	
	• • • • • • • • • •	

- 178 \expandafter\mi@skiplines%
- 179 \fi%
- 180 }

\mi@textdocument The text 'document' for \mi@checkdocumentend.

- 181 \def\mi@textdocument{document}
- \mi@percentempty

182 \def\mi@percentempty{\@empty}

8.4.3 Gobbling text

183 \bgroup
184 \catcode '\^^M=\active%

\mi@gobbletolineend Gobbles up any text till the end of the line. Continues with \mi@skiplines.
 (specialization of \mi@gobbletolineend@any)

```
185 \gdef\mi@gobbletolineend{%
```

```
186 \mi@gobbletolineend@any\mi@skiplines%
187 }
```

\mi@gobbletolineend@any Usage: \mi@gobbletolineend@any {\macro\}.
 Gobbles up any text till the end of the line. Continues with \macro\. The
 macro is long in case the line (stored in #2) contains a \par.
 188 \long\gdef\mi@gobbletolineend@any#1#2^^M{%
 189 #1%

190 }

191 $\ensuremath{\mathsf{egroup}}$

8.4.4 Catcode changes

We define the macros for changing catcodes:

```
\mi@activenewline
   \mi@verbatimnewline 192 \bgroup
\mbox{mi@emptyactivepercent}
                              We use | as the comment character as we make % active:
         \mi@activehat
                         193 \catcode'\|=14 %
                         194 \catcode'\^^M=\active%
                         195 catcode' \ = \ cotive
                         196 \gdef\mi@activenewline{|
                         197 \catcode'\^^M=\active|
                         198 \let^^M\@empty|
                         199 }|
                         200 \gdef\mi@verbatimnewline{|
                         201 \catcode'\^^M=\active|
202 \def^^M{\par\@gobbletwo}|
                         203 }|
                         204 \gdef\mi@emptyactivepercent{|
                         205 \catcode'\%=\active|
206 \let%\mi@percentempty|
                         207 }|
                         208 \catcode' ^= \cite{1}
                         209 \gdef\mi@activehat{|
                         210 \catcode'\^\active|
                         211 \let^\mi@hat|
                         212 ]
                         213 \egroup
     \mi@normalpercent
                         214 \def\mi@normalpercent{%
                         215 \catcode'\%=14 %
                         216 }
       \mi@otherbraces
                         217 \def\mi@otherbraces{%
                         218 \catcode'\{=12 \%
                         219 \catcode'\}=12 %
                         220 }
      \mi@normalbraces
                         221 \def\mi@normalbraces{%
                         222 \catcode'\{=1 %
                         223 \catcode'\}=2 %
                         224 }
```

Index

Numbers written in italic refer to the page where the corresponding entry is described, the ones underlined to the code line of the definition, the rest to the code lines where the entry is used.

Symbols	$\mbox{mi@checkbeginMI}$ 89, <u>119</u>	<pre>\mi@normalbraces</pre>
\% 195, 205, 215	\mi@checkbeginMI@ .	. 98, 135, 168, <u>221</u>
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