The step4ht TeX4ht package*

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2000/01/20

Abstract

The step4ht package, in conjunction with TeX4ht can be used to convert LATEX STEP documents into HTML tagged documents.

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1 Introduction

The step4ht package can be used in conjunction with the TeX4ht system to convert LATEX ISO 10303 (STEP) documents into HTML tagged documents.

Section 2 describes the package and commented source code for the package is in Section 3.

^{*}This file has version number v0.1, last revised 2000/01/20.

This manual is typeset according to the conventions of the LATEX DOC-STRIP utility which enables the automatic extraction of the LATEX macro source files [GMS94].

1.1 Acknowledgement

Development of the step4ht package would not have been possible without the help and expertise of Eitan Gurari, and in particular his willingness to put up with the many questions I asked.

2 The step4ht package

The TeX4ht system has been developed by Eitan Gurari (see Chapter 4 and Appendix B in [GR99]). It is a general purpose conversion system to convert LATEX tagged documents into HTML (or other *ML) tagged documents. TeX4ht can be obtained from http://www.cis.ohio-state.edu/~gurari/TeX4ht/mn.html. The step4ht package is not guaranteed to work with versions of TeX4ht earlier than mid-January 2000. At the time of writing, the default TeX4ht distribution was dated mid-1999. The latest version of TeX4ht is obtainable from http://www.cis.ohio-state.edu/~gurari/TeX4ht/bugfixes.html.

To use the step4ht package, just process the LATEX document as you would any other under TeX4ht. That is, either call the ht script on a document starting like:

```
\documentclass[...]{isov2}
\usepackage[...]{tex4ht}
\usepackage{isov13}
...
```

or call the htlatex script on a document without the \usepackage[...] {tex4ht} line.

3 The package code

The following code is based on html0.4ht, html32.4ht and html4.4ht, all written by Eitan Gurari, together with code in the iso4ht package.

Most of the necessary work already exists in latex.4ht, which sets up the LATEX kernel code and the iso4ht package which provides the setup and configuration for the iso class, together with html0.4ht, html32.4ht and html4.4ht provide the HTML option-related configurations for the kernel code. The HTML option-related configurations are embedded in stepv13.4ht instead of being supplied as seperate files.

Announce the name and version of the package.

```
1 (*usc) 2 \typeout{[stepv13.4ht 2000/01/20 version v0.1]} _3
```

3.1 Setup and hooks

The first major part of the code deals with setting up for configuring the LATEX commands and environments, which forms the second major portion of the code.

Setting up may involve adding hooks into commands, either by redefining them or, in simpler cases prepending and/or appending code before and/or after the original code. It can also involve specifying that commands are configurable.

The STEP cover page 3.1.1

The \STEPcover command is implemented as a picture environment. IATEX pictures are usually presented as .gif images in TeX4ht, so some major surgery is done to avoid pictures in this case.

First, we redefine the commands that correspond to the \STEPcover picture placement commands. The Working Group. \wg $4 \ensuremath{\wg}[1]{\ensuremath{\wg}/\#1}}$ The old Working Group. \oldwg 5 \renewcommand{\oldwg}[1]{\def\@oldwg{/#1}} The document number, where \donumber has hooks and typesets the number. \@docnumber \docnumber 6 \renewcommand{\@docnumber}{/N} \donumber 7 \renewcommand{\docnumber}[1]{\def\@docnumber{/N#1}} 8 \def\donumber{\a:donumber ISO TC 184/SC4\@wg\@docnumber \b:donumber} 9 \NewConfigure{donumber}{2} 10 \@docdate The document date, where dodocdate has hooks and typesets the date. \docdate 11 \renewcommand{\@docdate}{Date: } \dodocdate 12 \renewcommand{\docdate}[1]{\def\@docdate{\textbf{Date: #1}}} 13 \def\dodocdate{\a:dodocdate \@docdate \b:dodocdate} 14 \NewConfigure{dodocdate}{2} 15 The previous document number, where \dooldnumber has hooks and typesets \@olddocnumber the number. 16 \renewcommand{\@olddocnumber}{/N}

\olddocnumber \doolddocnumber

17 \renewcommand{\olddocnumber}[1]{\def\@olddocnumber{/N#1}}

18 \def\dooldnumber{\a:dooldnumber Supersedes ISO TC 184/SC4\@oldwg\@olddocnumber \b:dooldnumber}

19 \NewConfigure{dooldnumber}{2}

20

\dopartno

Typeset the Part number (and ballot cycle).

21 \newcommand{\dopartno}{%

\ifnum\value{b@cyc} < 2\relax 22

{\bf ISO\thest@tus\ 10303-\thespartno} 23

\else 24

{\bf ISO\thest@tus\ 10303-\thespartno.\theb@cyc} 25

fi

27 \pend:def\dopartno{\a:dopartno}

```
28 \append:def\dopartno{\b:dopartno}
               29 \NewConfigure{dopartno}{2}
               30
   \doptitle
                  Typeset the Part title.
               31 \newcommand{\doptitle}{%
               32
                   {\bf \st@pn@me : \thes@ries : \thed@ctitle}
               33 }
               34 \pend:def\doptitle{\a:doptitle}
               35 \append:def\doptitle{\b:doptitle}
               36 \NewConfigure{doptitle}{2}
                  Typeset the title COPYRIGHT NOTICE.
   \cpnotice
               38 \newcommand{\cpnotice}{\a:cpnotice COPYRIGHT NOTICE \b:cpnotice}
               39 \NewConfigure{cpnotice}{2}
               40
   \@abstract
                  The abstract, where \doabstract has hooks and typesets the abstract.
   \abstract
               41 \renewcommand{\@abstract}{\textbf{ABSTRACT}: }
  \doabstract
               42 \renewcommand{\abstract}[1]{\def\@abstract{\textbf{ABSTRACT}: #1}}
               43 \def\doabstract{\a:doabstract \@abstract \b:doabstract}
               44 \NewConfigure{doabstract}{2}
                  The KEYWORDS, where \dokeywords has hooks and typesets the keywords.
   \@keywords
   \keywords
               46 \renewcommand{\@keywords}{\textbf{KEYWORDS}: }
  \dokeywords
               47 \renewcommand{\keywords}[1]{\def\@keywords{\textbf{KEYWORDS}: #1}}
               48 \def\dokeywords \\a:dokeywords \\b:dokeywords}
               49 \NewConfigure{dokeywords}{2}
               50
                  The COMMENTS TO READERS, where \docomread has hooks and typesets
   \@comread
    \comread
               the comments.
   \docomread
               51 \renewcommand{\@comread}{\textbf{COMMENTS TO READER}: }
               52 \renewcommand{\comread}[1]{\def\@comread{\textbf{COMMENTS TO READER}: #1}}
               53 \def\docomread{\a:docomread \@comread \b:docomread}
               54 \NewConfigure{docomread}{2}
               55
                  Contact information for the project leader.
      \owner
    \address
               56 \renewcommand{\owner}[1]{\def\@owner{#1}}
   \telephone
               58 \renewcommand{\telephone}[1]{\def\@telephone{#1}}
       \email
               59 \renewcommand{\fax}[1]{\def\@fax{#1}}
               60 \renewcommand{\email}[1]{\def\@email{#1}}
               61
   \altowner
                  Contact information for the document editor.
  \altaddress
               62 \renewcommand{\altowner}[1]{\def\@altowner{#1}}
\alttelephone
               63 \ensuremath{$\a$} [1] {\ensuremath{$\a$}} altaddress{\#1}}
      \altfax
               64 \renewcommand{\alttelephone}[1]{\def\@alttelephone{#1}}
   \altemail
```

```
65 \renewcommand{\altfax}[1]{\def\@altfax{#1}}
                 66 \label{lemail} [1] {\def\@altemail{\#1}}
                 67
                    The \STEPcover command is redefined to add hooks at the start and end.
     \STEPcover
                 68 \renewcommand{\STEPcover}[1]{
                 69 \a:STEPcover
                 70 #1
                 71 \drawcoversheet
                 72 \b:STEPcover
                 73 }
                 74 \NewConfigure{STEPcover}{2}
                     \drawcoversheet is redefined to typeset the cover instead of drawing it.
\drawcoversheet
                 76 \renewcommand{\drawcoversheet}{
                 77 \donumber \\
                 78 \dodocdate \\
                 79 \dooldnumber \\
                 80 \dopartno \\
                 81 \doptitle \\
                 82
                 83 \ifc@pyrightopt
                                      \input{bpfsX} \fi % IS
                    \ifisst@ndard
                 84
                    \iffdisst@ndard \input{bpfs2} \fi % FDIS
                 85
                    \ifdisst@ndard \input{bpfs3} \fi % DIS
                    \ifcdst@ndard
                                     \input{bpfs4} \fi % CD
                 87
                     \ifwdst@ndard
                                     \input{bpfs4} \fi % WD
                 88
                 89 \ift@chrep
                                      \input{bpfsX} \fi % Tech Report
                 90 \fi
                 91
                 92 \doabstract \\
                 93 \dokeywords \\
                 94 \docomread \\
                 95 \begin{tabular}{|1|p{0.3\textwidth}|p{0.3\textwidth}|} \hline
                        & Project Leader & Project Editor \\ \hline
                 97 Name & \@owner & \@altowner \\
                 98 Address & \@address & \@altaddress \\
                 99 Telephone & \@telephone & \@alttelephone \\
                100 TeleFacsimile & \@fax & \@altfax \\
                101 Email & \@email & \@altemail \\ \hline
                102 \end{tabular}
                 And, as before, clear out the cover commands which are no longer needed.
                     \undef@covercmds
                104
                105 }
                106
```

3.1.2 Miscellaneous

\@presteptitle \stepparttitle The \stepparttitle is redefined to use the \titleclause* command as defined in the iso4ht package. The \@presteptitle command is just a helper. The configuration of \titleclause* is defined in iso4ht.

```
107 \newcommand{\@presteptitle}{\scivm@in \stepc@mp \thisp@rtno{\thespartno}}
108 \renewcommand{\stepparttitle}[1]{%
109 \gdef\thestepparttitle{{\@presteptitle \sptitle{#1}}}
110 \titleclause*{\thestepparttitle}
111 }
112
```

3.2 Configuration

All, or nearly all, configurations depend on the HTML level option chosen. Typically, html0 results in empty or null values of the hooks; the \NewConfigure command provides empty configurations. html32 has some simple hook values, while html4 are the most complex.

3.2.1 STEP cover page

```
\STEPcover
  \donumber 113 \:CheckOption{0.0}
  \dodocdate 114 \if:Option
\dooldnumber 115
                  %%%% html0.0
   \dopartno 116
   \doptitle 117 \else
                   \:CheckOption{3.2}
   \cpnotice ^{118}
                   \if:Option
\verb|\doabstract||^{119}
                   %%%% html3.2
\verb|\dokeywords||^{120}
             121
                     \Configure{STEPcover}{\HCode{<hr>}}{\HCode{<hr>}}
 \docomread
             122
                     \Configure{donumber}{\HCode{<h3>}}{\HCode{</h3>}}
             123
                     \Configure{dodocdate}{\HCode{<h5>}}{\HCode{</h5>}}
             124
                     \Configure{dooldnumber}{\HCode{<h4>}}{\HCode{</h4>}}
             125
                     \Configure{dopartno}{\HCode{<h4>}}{}
             126
                     \Configure{doptitle}{}{\HCode{</h4>}}
                     \Configure{cpnotice}{\HCode{<h5>}}{\HCode{</h5>}}
             127
                     \Configure{doabstract}{\HCode{<blockquote>}}{\HCode{</blockquote>}}
             128
             129
                     \Configure{dokeywords}{\HCode{<blockquote>}}{\HCode{</blockquote>}}
             130
                     \Configure{docomread}{\HCode{<blockquote>}}{\HCode{</blockquote>}}
             131
             132
                   \else
             133
                   %%%% html4.0
             134
                     \Configure{STEPcover}{\HCode{<hr>}}{\HCode{<hr>}}
             135
                     \Configure{STEPcover}{\HCode{<hr>}}{\HCode{<hr>}}
             136
                     \Configure{donumber}{\HCode{<h3>}}{\HCode{</h3>}}
                     \Configure{dodocdate}{\HCode{<h5>}}{\HCode{</h5>}}
             137
                     \Configure{dooldnumber}{\HCode{<h4>}}{\HCode{</h4>}}
             138
                     \Configure{dopartno}{\HCode{<h4>}}{}
             139
```

```
140 \Configure{doptitle}{}\\HCode{</h4>}\\
141 \Configure{cpnotice}{\\HCode{<\h5>}}\\\HCode{</h5>}\\
142 \Configure{doabstract}{\\HCode{<\blockquote>}}{\\HCode{<\blockquote>}}\\
143 \Configure{dokeywords}{\\HCode{<\blockquote>}}{\\HCode{<\blockquote>}}\\
144 \Configure{docomread}{\\HCode{<\blockquote>}}{\\HCode{<\blockquote>}}\\
145 \\
146 \\
147 \\
148
```

3.2.2 Miscellaneous

\start:env Currently these are defined in the html*.4ht files but they might dissapear in \end:env future, so make sure they are defined.

```
149 \:CheckOption{0.0}
              150 \if:Option
              151
                   %%%% html0.0
              152
                   \def\start:env#1{}
                   \def\end:env{}
              153
              154 \else
                   \CheckOption{3.2}
              155
              156
                   \if:Option
              157
                   %%%% html3.2
                     \def\start:env#1{\IgnorePar\HCode{<\tbl:XV{#1}><td\Hnewline}}
              158
                     \def\end:env{\IgnorePar \end:TTT\ShowPar}
              159
                   \else
              160
              161
                   %%%% html4
                     \def\start:env#1{\IgnorePar\EndP\HCode{<div class="#1"><\tbl:XV{#1}><tr
              162
                            class="#1"><td\Hnewline class="#1">}}
              163
                     \def\end:env{\IgnorePar \end:TTT\HCode{</div>}\ShowPar}
              164
                   \fi
              165
              166 \fi
              167
             These are all simple environments, except for majorsublist which is a wrapper
              for itemize.
       rspec 168 \:CheckOption{0.0}
       sspec 169 \if:Option
       tspec 170
                  %%%% html0.0
                   \ConfigureEnv{espec}{}{}{}}
       dtext 171
    attrlist 172
                   \ConfigureEnv{fspec}{}{}{}{}
                   \ConfigureEnv{rspec}{}{}{}{}
   fproplist ^{173}
                   \ConfigureEnv{sspec}{}{}{}}
   iproplist ^{174}
    {\tt enumlist}^{\phantom{0}175}
                   \ConfigureEnv{tspec}{}{}{}{}
                   \ConfigureEnv{dtext}{}{}{}{}
              176
     arglist
                   \ConfigureEnv{attrlist}{}{}{}{}
              177
majorsublist
             178
                   \ConfigureEnv{fproplist}{}{}{}}
              179
                   \ConfigureEnv{iproplist}{}{}{}}
                   \ConfigureEnv{enumlist}{}{}{}{}
              180
```

```
\ConfigureEnv{majorsublist}{}{}{}{}
        182
        183
        184 \else
        185
              \:CheckOption{3.2}
              \if:Option
        186
        187
              %%%% html3.2
        188
                \ConfigureEnv{espec}{\start:env{espec}}{\end:env}{}{}
                \ConfigureEnv{fspec}{\start:env{fspec}}{\end:env}{}{}
        189
                \ConfigureEnv{rspec}{\start:env{rspec}}{\end:env}{}{}
        190
                \ConfigureEnv{sspec}{\start:env{sspec}}{\end:env}{}{}
        191
        192
                \ConfigureEnv{tspec}{\start:env{tspec}}{\end:env}{}{}
                \ConfigureEnv{dtext}{\start:env{dtext}}{\end:env}{}{}
        193
                \ConfigureEnv{attrlist}{\start:env{attrlist}}{\end:env}{}{}
        194
                \ConfigureEnv{fproplist}{\start:env{fproplist}}{\end:env}{}{}
        195
                \ConfigureEnv{iproplist}{\start:env{iproplist}}{\end:env}{}{}
        196
                \ConfigureEnv{enumlist}{\start:env{enumlist}}{\end:env}{}{}
        197
                \ConfigureEnv{arglist}{\start:env{arglist}}{\end:env}{}{}
        198
        199
                \ConfigureEnv{majorsublist}{\start:env{majorsublist}}{\end:env}{}{}
        200
        201
              \else
              %%%% html4.0
        202
                \ConfigureEnv{espec}{\start:env{espec}}{\end:env}{}{}
        203
                \ConfigureEnv{fspec}{\start:env{fspec}}{\end:env}{}{}
        204
        205
                \ConfigureEnv{rspec}{\start:env{rspec}}{\end:env}{}{}
                \ConfigureEnv{sspec}{\start:env{sspec}}{\end:env}{}{}
        206
                \ConfigureEnv{tspec}{\start:env{tspec}}{\end:env}{}{}
        207
        208
                \ConfigureEnv{dtext}{\start:env{dtext}}{\end:env}{}{}
                \ConfigureEnv{attrlist}{\start:env{attrlist}}{\end:env}{}{}
        209
                \ConfigureEnv{fproplist}{\start:env{fproplist}}{\end:env}{}{}
        210
                \ConfigureEnv{iproplist}{\start:env{iproplist}}{\end:env}{}{}
        211
        212
                \ConfigureEnv{enumlist}{\start:env{enumlist}}{\end:env}{}{}
        213
                \ConfigureEnv{arglist}{\start:env{arglist}}{\end:env}{}{}
                \ConfigureEnv{majorsublist}{\start:env{majorsublist}}{\end:env}{}{}
        214
        215
        216
             \fi
        217 \fi
        218
         This is a list environment, similar to the description environment, except that
expdesc
         there is a colon after the label. It is called from within the ...list environments
         after a local heading.
        219 \:CheckOption{0.0}
        220 \if:Option
        221
              %%%% html0.0
              \ConfigureList{expdesc}{}{}{}{}
        222
        223
        224 \else
        225
             \:CheckOption{3.2}
        226
             \if:Option
```

\ConfigureEnv{arglist}{}{}{}{}

181

```
%%%% html3.2
227
       \ConfigureList{expdesc}%
228
         {\HCode{<dl>}}
229
         {\HCode{</dl>}\ShowPar}
230
         {\HCode{<dt>\bgroup \bf}
231
232
         {: \egroup\HCode{<dd\Hnewline>}}
233
234
     \else
     %%%% html4.0
235
       \ConfigureList{expdesc}%
236
         {\EndP\HCode{<dl class="expdesc">}\let\end:itm=\empty}
237
         {\EndP\HCode{</dd></dl>}\ShowPar}
238
239
         {\end:itm\def\end:itm{\EndP\Tg</dd>}
            \HCode{<dt class="expdesc">}\bgroup \bf}
240
         {: \egroup\EndP\HCode{</dt><dd\Hnewline class="expdesc">}}
241
242
     \fi
243
244 \fi
245
246 \endinput
247
    The end of the package
248 (/usc)
```

3.3 Observations

There are three main aspects to developing TeX4ht code and configurations for a new package:

- 1. Finding out what hooks and configurations are already available.
- 2. Determining what additional hooks, and where they should be put, for the new package.
- 3. Configuring all the hooks.

TeX4ht has added many hooks to the LATEX kernel and packages based on kernel code inherit those hooks. I found it advisable to run a test document with the new package(s) through TeX4ht to see what the result looked like. Depending on the package it may be that the inherited hooks and configuration are sufficient and nothing needs to be done.

For this particular package, only a few new hooks were required, but it was necessary in some cases to drastically revamp some of the package code — most noticeably for the \STEPcover command. Actually, as I am also the author of the step package I did have the luxury of being able to change some of the internal package code to make a better match between the LATEX typesetting view of the world and the TeX4ht world view.

There are other packages that, in their turn, use the step package and it turned out that they required no new hooks or changes to the existing configurations.

The rest of this section is concerned with item 2, namely adding hooks.

3.3.1 Colon is a letter

Within the TeX4ht 'environment', that is the *.4ht files, the colon character (:) acts as a letter in a similar manner as the at character (@) does in class and package files; @ is also treated as a letter in the environment. Normally, something like \start:env{myenv} would be treated as the command \start followed by the text :env{myenv}. In the TeX4ht environment it is the command \start:env with the argument {myenv}. If any commands like this occur in the preamble to a LATEX document, then they must be surrounded by \makecolonletter and \restorecolon, which may be defined as:

```
\chardef\oldcolon=\thecatcode'\:
\newcommand{\makecolonletter}{\catcode'\:11\relax}
\newcommand{\restorecolon}{\catcode'\:=\oldcolon\relax}
```

The fact that command names can include a colon means that you have to be careful in code that includes any colon characters. In IATEX, code like like {footnote \thefootnote:} will print the footnote number immediately followed by a colon (e.g., footnote 3:). In the TeX4ht environment you are more likely to get an error message saying that \thefootnote: is undefined! Instead, this needs to be coded as {footnote \thefootnote:}, so that the \thefootnote command is ended by the space before the colon.

3.3.2 Adding code and hooks

A LATEX idiom for adding code at the start and/or end of an existing macro which takes no arguments called, say \foo, is:

```
\let\oldfoo\foo
\renewcommand{\foo}{new-start-code \oldfoo new-end-code}
```

Similarly for commands \baz and \biz which take one and two arguments respectively:

```
\let\oldbaz\baz
\renewcommand{\baz}[1]{new-start-code \oldbaz{#1} new-end-code}
\let\oldbiz\biz
\renewcommand{\biz}[2]{new-start-code \oldbiz{#1}{#2} new-end-code}
```

 $^{^{1}}$ Note that a package may redefine the category code for the colon, which is why the old value is saved.

As these kinds of redefinitions are a common occurrence tex4ht.sty provides commands that encapsulate the above idiom. These are \pend:def\foo{new-start-code} and \append:def\foo{new-end-code} for when \foo is a macro without arguments, and there are similar commands for prepending and appending to macros with up to three arguments. Repeating and extending the LATEX example, in the TeX4ht environment it could be coded as:

The definition of a hook in a macro called, say \buz , takes the form $\X:buz$ where X is a single letter. For example, adding a configurable hook at the start and end of the macro \buz can be done like this:

Note that by default a <code>NewConfigure{baz}{2}</code> command expects the hook corresponding to the first argument to be <code>\a:baz</code> and the hook corresponding to the second argument to be <code>\b:baz</code>. Extending the example, <code>NewConfigure{foo}{9}</code> will expect the hook corresponding to the ninth argument to be <code>\i:foo</code> ('i' is the ninth letter of the alphabet). This default setting for <code>NewConfigure</code> has been created via:

```
\label{lem:configure} $$ \operatorname{NewConfigure}_{a:}_{b:}_{c:}_{d:}_{e:}_{f:}_{g:}_{h:}_{i:}$ in tex4ht.sty.
```

As an example for hook insertion, assume a macro defined like:

```
\newcommand{\mac}[1]{START #1 END}
```

in which there are four potential places for hooks (call them h1 to h4):

{h1 START h2 #1 h3 END h4}. Hooks h1 and h4 can be added via \pend:defI and \append:defI, but these are not sufficient by themselves. Other methods are required for inserting all four hooks. Two of these are:

• Redefine the whole macro from scratch:

```
\label{local_mac} $$\operatorname{Command}(\max)_{1}_{a:\max} $TART \subset \#1 \leq END \geq \operatorname{NewConfigure}_{4}$
```

• Reuse parts of the original macro (similar to the LATEX ap/pre-pending idiom):

Either of these examples can be configured via:

```
\Configure{mac}%
{first arg for a hook} % \a:mac at the start of the command
{second arg for a hook} % \b:mac at the end of the command
{third arg for a hook} % \c:mac immediately before the argument
{fourth arg for a hook} % \d:mac immediately after the argument
```

Note that the hooks do not have to be placed in the $\mbox{\sc mand}$ in alphabetical order.

References

- [GMS94] Michel Goossens, Frank Mittelbach, and Alexander Samarin. *The LaTeX Companion*. Addison-Wesley Publishing Company, 1994.
- [GR99] Michel Goossens and Sebastian Rahtz (with Eitan Gurari, Ross Moore, and Robert Sutor). The LaTeX Web Companion Integrating TeX, HTML, and XML. Addison-Wesley Publishing Company, 1999.
- [Wil96] Peter R. Wilson. LaTeX for standards: The LaTeX package files user manual. NIST Report NISTIR, June 1996.

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Numbers written in italic refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in roman refer to the code lines where the entry is used.

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