The regstats package

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Abstract

This LaTeX package allows to count the number of used registers (counter, dimen, skip, muskip, box, token, input, output, math families, languages, insertions) and compare these to the maximum available number of such registers.

Contents

1 Introduction

This LaTeX package allows to count the number of used registers (counter, dimen, skip, muskip, box, token, input, output, math families, languages, insertions). Therefore the according `\count` is read. While `\count10` should be the number of the counters, `\count11` the one of the dimens and so on, it is possible to use option `proof`, in which case a new one of each register is used and looked at `\the\allocationnumber`, and this is compared to the number determined by reading the `\count`. The result for each register is compared to the maximum available number of the respective register (comparison independent of usage of option `proof`).

2 Usage

Just load the package placing

```
\usepackage[<options>]{regstats}
```

in the preamble of your LaTeX 2$_\varepsilon$ source file. The resulting message will be presented at the end of the compilation messages at the screen and in the `log` file.

2.1 Option

`option` The regstats package takes the following option:

2.1.1 proof

`proof` When option `proof` (or `proof=true`) is choosen, a new one of each register is used and looked at `\the\allocationnumber`, and this is compared to the number determined by reading the `\count`. The default is `proof=false`.

3 Alternatives

- regcount, 1999/08/03, v1.0, by Jean-Pierre F. Drucbert, provides the command `\rgcounts`, which can write the numbers of used registers into the `log` file anywhere (not only at the end) and does this automatically `\AtBeginDocument` and `\AtEndDocument` (but not `\AtVeryVeryEnd`). The number of allocated insertions is *wrong* in my opinion, because these are not numbered $1, 2, \ldots$, but start at a high number, which is then decreased. The package is compatibel with the regstats package (i. e. you can use both at the same time in one document) and available at http://www.ctan.org/pkg/regcount.

- One can manually search for the last appearance of `\count`, `\dimen`, `\skip`, `\muskip`, `\box`, `\toks`, `\read` (input), `\write` (output), `\mathgroup` (math familiy), `\language`, and `\insert`, and find the according number there.

(You programmed or found another alternative, which is available at CTAN:?
OK, send an e-mail to me with the name, location at CTAN:, and a short notice, and I will probably include it in the list above.)

4 Example

```
⟨*example⟩
\documentclass[british]{article}[2007/10/19]% v1.4h
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
\usepackage{hyperref}[2011/04/17]% v6.82g
\hypersetup{extension=pdf,%
 plainpages=false,%
 pdfpagelabels=true,%
 hyperindex=false,%
 pdflang={en},%
 pdftitle={regstats package example},%
 pdfauthor={Hans-Martin Muench},%
 pdfsubject={Example for the regstats package},%
 pdfkeywords={LaTeX, registers, read, write, language, box, dimen,%
 count, toks, muskip, skip, counter, regstats, Hans-Martin Muench},%
 pdfview=Fit,pdfstartview=Fit,%
 pdfpagelayout=SinglePage%
}
\usepackage[proof=false]{regstats}[2011/05/16]% v1.0b
\gdef\unit#1{\mathord{\thinspace\mathrm{#1}}}%
\listfiles
\begin{document}
\pagenumbering{arabic}
\section*{Example for regstats}

This example demonstrates the use of package\newline
\textsf{regstats}, v1.0b as of 2011/05/16 (HMM).\newline
The used option was \texttt{proof=false}.
This is the default option.
For more details please see the documentation!\newline

\noindent Save per page about $200\unit{ml}$ water,
$2\unit{g}$ CO$_{2}$ and $2\unit{g}$ wood:\newline
Therefore please print only if this is really necessary.\newline

For the resulting message, please compile regstats-example.tex and
have a look at the end of the log-file.

\end{document}
⟨/example⟩
```

5 The implementation

We start off by checking that we are loading into LaTeX 2_ε and announcing the name and version of this package.

```
⟨*package⟩
\NeedsTeXFormat{LaTeX2e}[2009/09/24]
\ProvidesPackage{regstats}[2011/05/16 v1.0b
              Counting used registers (HMM)]

```

A short description of the regstats package:

```
%% Allows to count the number of used registers
%% (counter, dimen, skip, muskip, box, token, input, output,
%%  math families, languages, insertions)
%% and compare these to the maximum available number of such registers.

```

We need the kvoptions and atveryend packages by Heiko Oberdiek:

```
\RequirePackage{kvoptions}[2010/12/23]% v3.10
\RequirePackage{atveryend}[2011/04/23]% v1.7

```

A last information for the user:

```
%% regstats may work with earlier versions of LaTeX and these
%% packages, but this was not tested. Please consider updating
%% your LaTeX and packages to the most recent version
%% (if they are not already the most recent version).

```

See subsection 6.1 about how to get them.

We process the option:

```
\SetupKeyvalOptions{family=regstats,prefix=regstats@}
\DeclareBoolOption{proof}% \regstats@proof
\ProcessKeyvalOptions*

```

We try to determine, whether ε-TeX is available:

```
\newif\ifetex
\begingroup\expandafter\expandafter\expandafter\endgroup
\expandafter\ifx\csname eTeXversion\endcsname\relax
 \etexfalse
\else
 \etextrue
\fi

\ifetex
  \PackageInfo{regstats}{e-TeX found.}
\else
  \PackageWarning{regstats}{Could not find e-TeX.\MessageBreak%
    That can mean that e-TeX was disabled or\MessageBreak%
    that your distribution of TeX does not contain e-TeX.\MessageBreak%
    Some packages will not work without e-TeX,\MessageBreak%
    but should give according messages.\MessageBreak%
   }
\fi

```

`\AtVeryEndDocument` we write to `\AtVeryVeryEnd`, thus the code will be executed quite late during the compilation. We define a new command to determine the sigular/plural form.

```
\AtVeryEndDocument{%
 \AtVeryVeryEnd{%
   \newcommand{\regstats@s}[3]{%
     \setcounter{regstatscount}{#1}
     \ifnum \value{regstatscount}=0
       \setcounter{regstatscount}{2}
     \fi
     \ifnum \value{regstatscount}>1
       \gdef\regstats@pl{#3}
     \else
       \gdef\regstats@pl{#2}
     \fi
    }
   \newcounter{regstatscount}
   \edef\regstats@counter{\the\allocationnumber}
```

When option `proof` was choosen, a new register of the named types is used and its number compared with the according `count` number. We give a warning about the use of additional registers.

```
   \ifregstats@proof
     \PackageWarning{regstats}{%
       Package regstats loaded with option 'proof'.\MessageBreak%
       This package itself will use one of each register\MessageBreak%
       for testing!%
       }%
     \def\regstats@proof{1}
     \edef\regstats@test{\the\count10}
     \ifx\regstats@counter\regstats@test
     \else \message{Discrepancy when counting count registers.^^J}
           \def\regstats@proof{0}
     \fi
     \newdimen{\regstatsdimen}
     \edef\regstats@dimen{\the\allocationnumber}
     \edef\regstats@test{\the\count11}
     \ifx\regstats@dimen\regstats@test
     \else \message{Discrepancy when counting dimen registers.^^J}
           \def\regstats@proof{0}
     \fi
     \newskip\regstatsskip
     \edef\regstats@skip{\the\allocationnumber}
     \edef\regstats@test{\the\count12}
     \ifx\regstats@skip\regstats@test
     \else \message{Discrepancy when counting skip registers.^^J}
           \def\regstats@proof{0}
     \fi
     \newmuskip\regstatsmuskip
     \edef\regstats@muskip{\the\allocationnumber}
     \edef\regstats@test{\the\count13}
     \ifx\regstats@muskip\regstats@test
     \else \message{Discrepancy when counting muskip registers.^^J}
           \def\regstats@proof{0}
     \fi
```

```
\newbox\regstatsbox
\edef\regstats@box{\the\allocationnumber}
\edef\regstats@test{\the\count14}
\ifx\regstats@box\regstats@test
\else \message{Discrepancy when counting box registers.^^J}
      \def\regstats@proof{0}
\fi
\newtoks\regstatstoks
\edef\regstats@toks{\the\allocationnumber}
\edef\regstats@test{\the\count15}
\ifx\regstats@toks\regstats@test
\else \message{Discrepancy when counting toks registers.^^J}
      \def\regstats@proof{0}
\fi
\newread\regstatsread
\edef\regstats@read{\the\allocationnumber}
\edef\regstats@test{\the\count16}
\ifx\regstats@read\regstats@test
\else \message{Discrepancy when counting read registers.^^J}
      \def\regstats@proof{0}
\fi
\newwrite\regstatswrite
\edef\regstats@write{\the\allocationnumber}
\edef\regstats@test{\the\count17}
\ifx\regstats@write\regstats@test
\else \message{Discrepancy when counting write registers.^^J}
      \def\regstats@proof{0}
\fi
\newfam\regstatsfam
\edef\regstats@fam{\the\allocationnumber}
\edef\regstats@test{\the\count18}
\ifx\regstats@fam\regstats@test
\else \message{Discrepancy when counting fam registers.^^J}
      \def\regstats@proof{0}
\fi
\newlanguage\regstatslanguage
\edef\regstats@language{\the\allocationnumber}
\edef\regstats@test{\the\count19}
\ifx\regstats@language\regstats@test
\else \message{Discrepancy when counting language registers.^^J}
      \def\regstats@proof{0}
\fi
\newinsert\regstatsinsert
\edef\regstats@insert{\the\allocationnumber}
\edef\regstats@test{\the\count20}
\ifx\regstats@insert\regstats@test
\else \message{Discrepancy when counting insert registers.^^J}
      \def\regstats@proof{0}
\fi
```

When there was a discrepancy somewhere, we give the according message.

```
\edef\regstats@test{0}
\ifx\regstats@proof\regstats@test
  \message{Regstats test for register numbers failed.^^J}
  \message{Therefore option 'proof' is necessary to get the right numbers.^^J}
\fi
```

```
  \else
```

Without option `proof`, we just take the values of the various `count`s.

```
    \edef\regstats@dimen{\the\count11}
    \edef\regstats@skip{\the\count12}
    \edef\regstats@muskip{\the\count13}
    \edef\regstats@box{\the\count14}
    \edef\regstats@toks{\the\count15}
    \edef\regstats@read{\the\count16}
    \edef\regstats@write{\the\count17}
    \edef\regstats@fam{\the\count18}
    \edef\regstats@language{\the\count19}
    \edef\regstats@insert{\the\count20}
  \fi
```

`insert`s are used starting with a high number and moving downward.

```
  \setcounter{regstatscount}{233}
  \addtocounter{regstatscount}{-\regstats@insert}
  \addtocounter{regstatscount}{+1}
  \edef\regstats@insert{\arabic{regstatscount}}
```

The number of used registers of each type and the number of available ones (estimated, probably dependent on distribution and its version, here just distinguished according to availability of ε-TEX) is written to screen and `log` file.

```
    \message{^^J}
    \message{Here is how much of TeX's registers you used^^J}%
    \message{\space (numbers of available registers are estimated!):^^J}%
    \regstats@s{\regstats@counter}{}{s}
    \message{ \regstats@counter\space counter register\regstats@pl\space out of}\ifetex\message{32767}\else\message{233}\fi
    \regstats@s{\regstats@dimen}{}{s}
    \message{^^J \regstats@dimen\space dimen register\regstats@pl\space out of}\ifetex\message{32767}\else\message{233}\fi
    \regstats@s{\regstats@skip}{}{s}
    \message{^^J \regstats@skip\space skip register\regstats@pl\space out of 233}
    \regstats@s{\regstats@muskip}{}{s}
    \message{^^J \regstats@muskip\space muskip register\regstats@pl\space out of}\ifetex\message{32767}\else\message{255}\fi
    \regstats@s{\regstats@box}{}{s}
    \message{^^J \regstats@box\space box register\regstats@pl\space out of}\ifetex\message{32767}\else\message{233}\fi
    \regstats@s{\regstats@toks}{}{s}
    \message{^^J \regstats@toks\space toks register\regstats@pl\space out of}\ifetex\message{32767}\else\message{255}\fi
    \regstats@s{\regstats@read}{}{s}
    \message{^^J \regstats@read\space input stream\regstats@pl\space (read) out of 15}
    \regstats@s{\regstats@write}{}{s}
    \message{^^J \regstats@write\space output stream\regstats@pl\space (write) out of 15}
    \regstats@s{\regstats@fam}{y}{ies}
    \message{^^J \regstats@fam\space math famil\regstats@pl\space (fam) out of 15}
    \regstats@s{\regstats@language}{}{s}
    \message{^^J \regstats@language\space language code\regstats@pl\space out of 255}
    \regstats@s{\regstats@insert}{}{s}
    \message{^^J \regstats@insert\space insertion\regstats@pl\space out of}\ifetex\message{124^^J}\else\message{101^^J}\fi
    }
  }

```

That's it!

227 ⟨/package⟩

6 Installation

6.1 Downloads

Everything is available at CTAN:, http://www.ctan.org/tex-archive/, but may need additional packages themselves.

`regstats.dtx` For unpacking the `regstats.dtx` file and constructing the documentation it is required:

- TEXFormat LATEX 2ε: http://www.CTAN.org/
- document class ltxdoc, 2007/11/11, v2.0u,
  CTAN:macros/latex/base/ltxdoc.dtx
- package pdflscape, 2008/08/11, v0.10,
  CTAN:macros/latex/contrib/oberdiek/pdflscape.dtx
- package holtxdoc, 2011/02/04, v0.21,
  CTAN:macros/latex/contrib/oberdiek/holtxdoc.dtx
- package hypdoc, 2010/03/26, v1.9,
  CTAN:macros/latex/contrib/oberdiek/hypdoc.dtx

`regstats.sty` The `regstats.sty` for LATEX 2ε (i. e. all documents using the regstats package) requires:

- TEXFormat LATEX 2ε, http://www.CTAN.org/
- package kvoptions, 2010/12/23, v3.10,
  CTAN:macros/latex/contrib/oberdiek/kvoptions.dtx
- package atveryend, 2011/04/23, v1.7,
  CTAN:macros/latex/contrib/oberdiek/atveryend.dtx

`regstats-example.tex` The `regstats-example.tex` requires the same files as all documents using the regstats package, i. e. the ones named above and additionally:

- class article, 2007/10/19, v1.4h, from classes.dtx:
  CTAN:macros/latex/base/classes.dtx
- package regstats, 2011/05/16, v1.0b,
  CTAN:macros/latex/contrib/regstats/regstats.dtx
  (Well, it is the example file for this package, and because you are reading the documentation for the regstats package, it can be assumed that you already have some version of it – is it the current one?)

`Alternative` As possible alternative in section 3 there is listed

- regcount, 1999/08/03, v1.0:
  http://www.ctan.org/pkg/regcount

`Oberdiek` `holtxdoc` `kvoptions` `atveryend` `pdflscape` All packages of Heiko Oberdiek's bundle 'oberdiek' (especially holtxdoc, kvoptions, atveryend, and pdflscape) are also available in a TDS compliant ZIP archive:
CTAN:install/macros/latex/contrib/oberdiek.tds.zip.
It is probably best to download and use this, because the packages in there are quite probably both recent and compatible among themselves.

hyperref

hyperref is not included in that bundle and needs to be downloaded separately, http://mirror.ctan.org/install/macros/latex/contrib/hyperref.tds.zip.

Münch

A hyperlinked list of my (other) packages can be found at http://www.Uni-Bonn.de/~uzs5pv/LaTeX.html.

6.2 Package, unpacking TDS

Package. This package is available on CTAN:

CTAN:macros/latex/contrib/regstats/regstats.dtx
: The source file.

CTAN:macros/latex/contrib/regstats/regstats.pdf
: The documentation.

CTAN:macros/latex/contrib/regstats/regstats-example.pdf
: The compiled example file, as it should look like.

CTAN:macros/latex/contrib/regstats/README
: The README file.

CTAN:install/macros/latex/contrib/regstats.tds.zip
: Everything in TDS compliant, compiled format.

which additionally contains

regstats.ins	The installation file.
regstats.drv	The driver to generate the documentation.
regstats.sty	The `.style` file.
regstats-example.tex	The example file.
regstats-example.log	A `log` file for the example.

For required other packages, see the preceding subsection.

Unpacking. The `.dtx` file is a self-extracting docstrip archive. The files are extracted by running the `.dtx` through plain TEX:

```
tex regstats.dtx
```

About generating the documentation see paragraph 6.4 below.

TDS. Now the different files must be moved into the different directories in your installation TDS tree (also known as `texmf` tree):

```
regstats.sty         → tex/latex/regstats.sty
regstats.pdf         → doc/latex/regstats.pdf
regstats-example.tex → doc/latex/regstats-example.tex
regstats-example.pdf → doc/latex/regstats-example.pdf
regstats-example.log → doc/latex/regstats-example.log
regstats.dtx         → source/latex/regstats.dtx
```

If you have a `docstrip.cfg` that configures and enables docstrip's TDS installing feature, then some files can already be in the right place, see the documentation of docstrip.

6.3 Refresh file name databases

If your TEX distribution (teTEX, mikTEX,...) relies on file name databases, you must refresh these. For example, teTEX users run `texhash` or `mktexlsr`.

6.4 Some details for the interested

Unpacking with LATEX. The `.dtx` chooses its action depending on the format:

plain TEX: Run docstrip and extract the files.

LATEX: Generate the documentation.

If you insist on using LATEX for docstrip (really, docstrip does not need LATEX), then inform the autodetect routine about your intention:

```
latex \let\install=y\input{regstats.dtx}
```

Do not forget to quote the argument according to the demands of your shell.

Generating the documentation. You can use both the `.dtx` or the `.drv` to generate the documentation. The process can be configured by a configuration file `ltxdoc.cfg`. For instance, put this line into this file, if you want to have A4 as paper format:

```
\PassOptionsToClass{a4paper}{article}
```

An example follows how to generate the documentation with pdfLATEX:

```
pdflatex regstats.dtx
makeindex -s gind.ist regstats.idx
pdflatex regstats.dtx
makeindex -s gind.ist regstats.idx
pdflatex regstats.dtx
```

6.5 Compiling the example

The example file, regstats-example.tex, can be compiled via
`(pdf)latex regstats-example.tex`.

7 Acknowledgements

I would like to thank Heiko Oberdiek (heiko dot oberdiek at googlemail dot com) for providing the hyperref as well as a lot (!) of other useful packages (from which I also got everything I know about creating a file in `.dtx` format, ok, say it: copying), Jean-Pierre F. Drucbert for his regcount package, Robin Fairbairns for pointing me to the regcount package, and the news:comp.text.tex and news:de.comp.text.tex newsgroups for their help in all things TEX.

8 History

[2011/05/14 v1.0a]

- Upload to CTAN:.

[2011/05/16 v1.0b]

- Name clash with `regcount` package, fixed.
- `regcount` package listed as possible alternative.
- Bug: skip and muskip mixed up, fixed.
- Counting of skips, math families, and insertions added.
- Bug fix: insertions are numbered high to low.
- Option `proof` added.
- Diverse details.

When you find a mistake or have a suggestion for an improvement of this package, please send an e-mail to the maintainer, thanks! (Please see BUG REPORTS in the README.)

9 Index

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

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