Using the Sectioning Command Code of the Standard Classes

Markus Kohm

Version 2024-06-06 v0.9

A long time ago KOMA-Script was more or less just a collection of replacements for the three standard classes article, book and report. Replacing a standard class with a KOMA-Script class was easy, even if users used a lot of additional packages. Over the years, the author has added many new features and user interfaces to the classes. This also led to completely different implementation of the sectioning commands. But some packages depend on an implementation similar to the standard classes.

Package standardsectioning implements these commands with the code of the standard classes and also deactivates parts of the KOMA-Script user interface, which should not be used with these changes. These are more or less all commands to configure sectioning commands. It also reverts some internal macros of KOMA-Script.

Contents

1 What are the typical reasons for using package standardsectioning and how to do it? 2
2 How to select the correct sectioning code, if the automatism fails? 3
3 Implementation 4
  3.1 Messages ................................................................. 4
  3.2 Package order .......................................................... 4
  3.3 KOMA-Script deactivation code ...................................... 5
  3.4 Sectioning code of the standard classes ......................... 6
  3.5 Class dependent deactivation and implementation .............. 12

References 14
Index 14
Change History 15
1 What are the typical reasons for using package standardsectioning and how to do it?

Sometimes replacing a standard class by a KOMA-Script class results in new errors, because of incompatibility of some of the packages or the already existing preamble code with these classes. In such a case, you first should try out package \texttt{scrhack} without passing any option to that package. Package \texttt{scrhack} should be the first package after loading the document class, or even be loaded before the document class using \texttt{\RequirePackage} instead of \texttt{\usepackage}. If this already fixes the issue, you can try to find out which of the replacements and enhancements loaded by \texttt{scrhack} solved the issue and load only these.

Only if you cannot fix the issue this kind you can try loading \texttt{standardsectioning} either also using \texttt{scrhack} with corresponding options (see \cite{Koh23d}) or just loading \texttt{standardsectioning}.

Such errors happen, e.g., because \texttt{titlesec} makes assumptions about the definition of the sectioning commands that simply do not apply to the KOMA-Script classes. This leads, e.g., in the following example:

\begin{verbatim}
\documentclass{scrartcl}
\usepackage{titlesec}
\begin{document}
\section{Test Section}
Test text.
\end{document}
\end{verbatim}

to the error message:

Pack...
But note: This also means, that all the enhancements to these commands are broken! You cannot use \DeclareSectionCommand, \RedeclareSectionCommand, \DeclareNewSectionCommand, \ProvideSectionCommand, \DeclareSectionCommands, \RedeclareSectionCommands, \DeclareNewSectionCommands, or \ProvideSectionCommands any longer. Other commands like \partformat, \chapterformat, \sectionformat, \subsectionformat, \subsubsectionformat, \paragraphformat, \subparagraphformat and many more are not used anymore.

Sometimes a wrapper classes loads a KOMA-Script class and than also loads a package like titlesec. To load standardsections immediately after the class, you should use the generic class hook available from \LaTeX 2020-10-01:

\AddToHook{class/scrartcl/after}{\RequirePackage{standardsectioning}}
\AddToHook{class/scrbook/after}{\RequirePackage{standardsectioning}}
\AddToHook{class/scrreprt/after}{\RequirePackage{standardsectioning}}

These lines should be placed before \documentclass. If you are using an older \LaTeX version you can use KOMA-Script package scrlfile to do the same:

\RequirePackage{scrlfile}
\AfterClass{scrartcl}{\RequirePackage{standardsectioning}}
\AfterClass{scrbook}{\RequirePackage{standardsectioning}}
\AfterClass{scrreport}{\RequirePackage{standardsectioning}}

also before loading the class.

2 How to select the correct sectioning code, if the automatism fails?

By default, the package uses an automatism to decide which code of which standard class should be used. If the KOMA-Script class scrartcl is detected, automatically the code of article is used. If the KOMA-Script class scrreprt is detected, automatically the code of report is used. If the KOMA-Script class scrbook is detected, automatically the code of book is used. If none of these classes is detected, the existence of two commands is used. If \chapter is not defined, the code of article is used. If \chapter is defined, but \frontmatter is not defined, the code of report is used. If both \chapter and \frontmatter are defined, the code of book is used.

Very seldom this automatism fails and the wrong code is used, which results in error messages or printing mistakes. In this case you can load package standardsectioning with one of the options article, report or book to force the usage of the sectioning code of either article, report, or book. This could, e.g., be needed, if you are using a class, that defines \chapter and \frontmatter but not \if@mainmatter. In this case, you should use

\usepackage[report]{standardsectioning}

instead of

\usepackage{standardsectioning}

because otherwise the not defined \if@mainmatter will result in errors, when using \chapter.
3 Implementation

3.1 Messages

There are some messages, that may be used several times:

\msg_new:nnn { standardsectioning } { wrong-package-order }
{
wrong\textquote{package\textquoteright order\textquoteright detected.
}
You\textquote{ve loaded this package after package\textquoteright #1.\iow_newline:
But this cannot work.\iow_newline:
Loading aborted!
}
\msg_new:nnn { standardsectioning } { deactivate-extended-section-commands }
{
extended\textquote{sectioning\textquoteright option\textquoteright handling\textquoteright deactivated.
}
\msg_new:nnn { standardsectioning } { no-force-with-KOMA-Script-class }
{
package\textquote{option\textquoteright \#1\textquoteright is\textquoteright ignored\textquoteright due\textquoteright to\textquoteright usage\textquoteright of\textquoteright KOMA-Script\textquoteright class\textquoteright \KOMAClassName.
}

3.2 Package order

\texttt{hyperref} must not be loaded, because otherwise deactivation of \texttt{\scr@chapter@after@hyperref@patch} would not work.

\texttt{\textbackslash@ifpackageloaded { hyperref }
{
\msg_critical:nnn { standardsectioning } { wrong-package-order }
{ hyperref }
}
}\texttt{\textbackslash@ifpackageloaded { titlesec }
{
\msg_critical:nnn { standardsectioning } { wrong-package-order }
{ titlesec }
}\texttt{\textbackslash@ifpackageloaded { sectsty }
{
\msg_critical:nnn { standardsectioning } { wrong-package-order }
{ sectsty }
}
3.3 KOMA-Script deactivation code

Some deactivation code is common for all KOMA-Script classes and therefore we use an auxiliary function to not need to copy it several times.

```latex
\cs_new:Nn \@@_common_komascript_deactivation_code:
{\@startsection
KOMA-Script classes redefine this internal \LaTeX kernel macro. In this case \scr@startsection is defined, differs from \@startsection and has the definition found before redefining the original macro. We do nothing else but resetting \@startsection to this saved definition.

\RenewCommandCopy \@startsection \scr@startsection
\@sect
All these should be resetted to their original definitions stored in \scr@latex@....
\RenewCommandCopy \@sect \scr@latex@sect
\RenewCommandCopy \@ssect \scr@latex@ssect
\RenewCommandCopy \@xsect \scr@latex@xsect
\DeclareSectionCommand
These KOMA-Script commands do not make sense any longer after forced redefinition of \part ... \subparagraph. They even would not work correctly after resetting, e.g., \@startsection. So best reaction is to undefine them.
\cs_undefine:N \DeclareSectionCommand
\cs_undefine:N \DeclareSectionCommands
\cs_undefine:N \RedeclareSectionCommand
\cs_undefine:N \RedeclareSectionCommands
\cs_undefine:N \DeclareNewSectionCommand
\cs_undefine:N \DeclareNewSectionCommands
\cs_undefine:N \ProvideSectionCommand
\cs_undefine:N \ProvideSectionCommands
\DeclareNewSectionCommands
\RedeclareNewSectionCommands
\ProvideNewSectionCommands
\EndSectionCommands
\minisec
This also has to be undefined, because it also uses internal KOMA-Script definitions, which are deactivated.
\cs_undefine:N \minisec
\scr@chapter@before@hyperref@patch
\scr@chapter@after@hyperref@patch
Now, definitions without respecting hyperref are used, so hyperref should again be able to patch them. So the hack should deactivate the patch deactivation of the KOMA-Script classes.
\cs_gset_eq:NN \scr@chapter@before@hyperref@patch \relax
\cs_gset_eq:NN \scr@chapter@after@hyperref@patch \relax
\scr@osectarg
The KOMA-Script classes use this macro to store how to use the optional argument of section commands. But with the standard class definition the only possibility is to use it as running head and write it into the table of contents without any extended handling. So the only value, that makes sense is 0.
\int_if_zero:nF { \scr@osectarg }
{\msg_warning:nn { standardsectioning }
{ deactivate-extended-section-commands }
\cs_gset_eq:NN \c_zero_int
\scr@osectarg}
```

Further changing of the value has to be deactivated.

\renewcommand*{\scr@activate@xsection}{\int_if_zero:nF { ##1 }\}
\cs_gset_eq:NN \scr@osectarg \c_zero_int

These KOMA-Script commands are not used any longer. To detect errors, because of redefining them, we undefine them.

\cs_undefine:N \partlineswithprefixformat
\cs_undefine:N \sectionlinesformat
\cs_undefine:N \sectioncatchphraseformat

The KOMA-Script option does not make sense any longer. So it is deactivated and usage will throw an error.

\RelaxFamilyKey[.\KOMAClassFileName]{KOMA}{headings}%
\KOMA@kav@removekey{\KOMAClassFileName}{headings}%

The warning about loading titlesec has to be removed, because we do not expect errors any longer.

3.4 Sectioning code of the standard classes

These commands are redefined using code from classes.dtx 2024/02/08 v1.4n. Only \newcommand is replaced by \def and # are doubled. Depending on the class, we use different code:
3.5 Class dependent deactivation and implementation

If a KOMA-Script class has been loaded we need use the common deactivation code and the article sectioning code.

```latex
\@@_acticvation_code:
\cs_new:Nn \@@_activation_code:
{\@ifclassloaded { scrartcl }
 { \@@_common_komascript_deactivation_code:
 \@@_article_sectioning_code:
 }
{ \chapterlineswithprefixformat
  For scrbook and scrreprt we need additional deactivation code and the book resp. report sectioning code.
 \chapterlinesformat
}
```
\ifclassloaded { scrbook }
  {
    \ @@_common_komascript_deactivation_code:
    \cs_undefine:N \chapterlineswithprefixformat
    \cs_undefine:N \chapterlinesformat
    \@@_book_sectioning_code:
  }
\ifclassloaded { scrreprt }
  {
    \ @@_common_komascript_deactivation_code:
    \cs_undefine:N \chapterlineswithprefixformat
    \cs_undefine:N \chapterlinesformat
    \@@_report_sectioning_code:
  }
  {
    \ @@_article_sectioning_code:
  }
\fi
\ifclassloaded { scrartcl }
  {
    \ @@_common_komascript_deactivation_code:
    \cs_undefine:N \chapterlineswithprefixformat
    \cs_undefine:N \chapterlinesformat
    \@@_article_sectioning_code:
  }
\fi
\@@_book_sectioning_code:
\@@_report_sectioning_code:
\@@_article_sectioning_code:

For all other classes, we use a heuristic to either use the sectioning code of article, book, or report
\cs_if_exist:NTF \chapter
  {
    \cs_if_exist:cTF { frontmatter }
      {
        \ @@_book_sectioning_code:
      }
      {
        \ @@_report_sectioning_code:
      }
  }
\@@_article_sectioning_code:

\keys_define:nn { @@/internal }
  { force=article },
\keys_define:nn { @@/internal }
  { force=book },
\keys_define:nn { @@/internal }
  { force=report },

book (opt.) These options can be used to force the usage of one of the selection codes, but only if no article (opt.) KOMA-Script class has been used. So in the code section we first have to test for a KOMA-report (opt.) Script class and either throw a warning or do the redefinition of \@@.activation_code:.
\DeclareKeys
  { article .meta:nn = { @@/internal } { force=article },
    article .usage = load,
    book .meta:nn = { @@/internal } { force=book },
    book .usage = load,
    report .meta:nn = { @@/internal } { force=report },
    report .usage = load,
  }
\keys_define:nn { @@/internal }
  { force.code =
\ifclass{\msg_warning:nnn { standardsectioning } { no-force-with-KOMA-Script-class }{ #1 }}
\cs_set_eq:Nc \@@_activation_code: { \@@_#1_sectioning_code: }
\ProcessKeyOptions
\@@_activation_code:

References


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; numbers in roman refer to the code lines where the entry is used.

A

\textbf{article (opt.)} \hspace{1cm} 3, 423

\textbf{book (opt.)} \hspace{1cm} 3, 423

\section{Commands:}

\textbf{\chapter} \hspace{1cm} 73
\textbf{\chapterlinesformat} \hspace{1cm} 390
\textbf{\chapterlineswithprefixformat} \hspace{1cm} 390
\textbf{\DeclareNewSectionCommand} \hspace{1cm} 41
\textbf{\DeclareNewSectionCommands} \hspace{1cm} 41
\textbf{\DeclareSectionCommand} \hspace{1cm} 41
\textbf{\DeclareSectionCommands} \hspace{1cm} 41

\section{C}

\textbf{\chapter} \hspace{1cm} 73
\textbf{\chapterlinesformat} \hspace{1cm} 390
\textbf{\chapterlineswithprefixformat} \hspace{1cm} 390
\textbf{\paragraph} \hspace{1cm} 73
\part ........................................... 73
\partlineswithprefixformat ........... 66
\ProvideSectionCommand .............. 41
\ProvideSectionCommands ............. 41
\RedeclareSectionCommand .......... 41
\RedeclareSectionCommands .......... 41
\section .................................... 73
\sectioncatchphraseformat ............ 66
\sectionlinesformat .................... 66
\subparagraph ......................... 73
\subsection ............................... 73
\subsubsection .......................... 73

\DeclareNewSectionCommand ........ 41
\DeclareNewSectionCommands ........ 41
\DeclareSectionCommand .............. 41
\DeclareSectionCommands ............. 41

headings (opt.) ..................... 69

Options:
\article ............................. 3, 423
\book .................................. 3
\headings ................................ 69
\report .................................. 3, 423

Packages:
\titlesec ................................ 2
\paragraph ............................ 73
\part .................................... 73
\partlineswithprefixformat .......... 66

\@sect .................................. 38
\@ssect ................................ 38
\@startsection ......................... 37
\@xsect ................................ 38
\minisec ................................ 49
\scr@activate@xsection ............... 58
\scr@chapter@after@hyperref@patch ... 50
\scr@chapter@before@hyperref@patch 50
\scr@class@titlesec@warning ........... 71
\scr@osectarg ......................... 52

\@@_activation_code: ............ 382
\@@_article_sectioning_code: ...... 73
\@@_book_sectioning_code: ....... 73
\@@_common_komascript_deactivation_code:
........................................ 35
\@@_report_sectioning_code: ....... 73
\@sect .................................. 38
\@ssect ................................ 38
\@startsection ......................... 37
\@xsect ................................ 38
\minisec ................................ 49
\scr@activate@xsection ............... 58
\scr@chapter@after@hyperref@patch ... 50
\scr@chapter@before@hyperref@patch 50
\scr@class@titlesec@warning ........... 71
\scr@osectarg ......................... 52

\section .................................... 73
\sectioncatchphraseformat ............ 66
\sectionlinesformat .................... 66
\subparagraph ......................... 73
\subsection ............................... 73
\subsubsection .......................... 73

\TEX macros (internal):

\Change History

v0.1 – 2023/06/01
General: start of KOMA-Script spin-off

v0.9 – 2024/06/06
General: first release