The HomeworkAssignment class*

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April 30, 2017

1 Abstract

This class provides a relative simple docuemnt–type for homework, mainly created for assignments at the University This class is inherited from `article`, it is not perfect, but I am trying my verry best.

2 Options

`problemstyle=<1>`
`subproblemstyle=<1>`
`subsubproblemstyle=<1>`

These options allow the customizatuion of the displayed numbers. For Example, if `problemstyle=Roman, subproblemstyle=arabic, subsubproblemstyle=roman` is passed, The first subsubproblem of the first subproblem of the first problem would be labled as **i)** of **Problem I.1**.
Available options are `arabic`, `Alph`, `alph`, `Roman`, and `roman`. Standard values are: `problemstyle=arabic, subproblemstyle=alph, subsubproblemstyle=roman`.

2.1 Inherited options

Because the class is inherited by Abstract, every Option that can be passed to article, will be passed to article.

2.2 LaTeXWarning: Unused global option(s)

Because the Options are handled via `kvoptions` and passed directly to `article`, LaTeXraises this warning. IMHO, the Options are used and this warning can be ignored. Nevertheless I am working on it.

3 Commands

3.1 Document Informations

`\subject`
`\kurs`

Sets the subject of the document. Takes the subject as argument. Standard Value

*This document corresponds to HomeworkAssignment v1.5,dated 2017\04\29.

is “Kein Kurs”
`\kurs` is deprecated.

`\tutorial` `\tutorium` Sets the tutorial of the author. Takes it as an argument. Stamdard Value is empty, so that this command can be omitted.
`\tutorium` is deprecated.

`\deadline` `\abgabe` Sets the deadline of the document. Takes it as an argument. Standard value is `\today`.
`\abgabe` is deprecated

3.1.1 Inherited from `article`

`\author` Sets the author of the document.
`\date` Sets the date of the document.

3.2 Sectioning

Because the class is designed for Assignments, the sectioning-commands are different from Article

3.2.1 ‘plain’ Sectioning

`\problem` `\subproblem` `\subsubproblem` These commands work like theyr counterpart in article, except that there will be no number, nor will they increase a counter. Nevertheless, hey will be shown in the table of contents.

`\solution` `\proof` They work like Paragraph, but do not take an argument, instead they print out “Lösung” and “Beweis” respective. They are not mentioned in the table of contents.

3.2.2 ‘better’ Sectioning

The following commands are an augmented version of the “plain” commands.

`\newproblem` `\newsubproblem` `newsubsubproblem` These commands require no argument, and automatically create a numbered title. The optional Argument is the new value for the coresponding counter.

4 Pagestyle

4.1 Headers

5 Development and support

The package is developed at *github*:

`https://github.com/ACHinrichs/LaTeX-templates`

Please refer to that site for any bug report or development information.

6 Changelog

v1.0 - 2016/10/23 Intial

v1.1 - 2016/11/02 ...

v1.2 - 2016/11/03 ...

v1.3 - 2016/12/01 Provide the Class as .dtx file and more

v1.4 - 2017/04/29 "Minor" bugfixes

v1.5 - 2017/04/29 Problems are displayed in the table of contents. Type of numeration is now configurable.

v1.5.1 - 2017/04/29 Bugfix

7 Implementation

The following part is verry boring, but I have not found a solution to create a `.cls`–file without including the implemetation into the document. Loads LaTeX2e and sets the Version Loads the `article`, which is the base-class.

```
\RequirePackage{kvoptions} \SetupKeyvalOptions{ family=hwa,
  prefix=hwa@ } \DeclareStringOption[arabic]{problemsty}
\DeclareStringOption[alph]{subproblemsty}
\DeclareStringOption[roman]{subsubproblemsty} \ProcessKeyvalOptions*
```

Loads required Packages

```
\RequirePackage{suffix} \RequirePackage{fancyhdr}
\RequirePackage{ifthen}
```

Sets the page-headers.
All headers are cleread before they get any Text — just to be sure.
The headers look like specified above (4.1). Also inserts the Titlepage.

```

\fancypagestyle{firstpage}{
  %
  \fancyhf{}
  % clear all six fields
  \renewcommand{\headrulewidth}{.7pt}
  \renewcommand{\footrulewidth}{0pt} \fancyfoot[RE,LO]{\thepage}
  \fancyhead[L]{\hwa@tutorium } \fancyhead[R]{\@date } }
\fancypagestyle{followingpage}{
  %
  \fancyhf{}
  % clear all six fields
  \fancyhead[RE,LO]{\@author} \fancyhead[LE,RO]{\hwa@kurs\\ Abgabe:
    \hwa@abgabe} \fancyfoot[RE,LO]{\thepage}
  \renewcommand{\headrulewidth}{0.7pt}
  \renewcommand{\footrulewidth}{0pt} } \pagestyle{followingpage}
\AtBeginDocument{ \thispagestyle{firstpage}
  \setlength{\headheight}{25pt} }
```

7.1 Internal commands

7.1.1 Counter–Commands

`Counter--Commands`

These are used to output the Exercise numbers in the desired style

```
\newcommand{\hwa@problemno}{\arabic{problem}}
\newcommand{\hwa@subproblemno}{\alph{subproblem}}
\newcommand{\hwa@subsubproblemno}{\roman{subsubproblem}}
```

7.1.2 Counter–Style Parser

`Counter--Style Parser`

This takes a style-input (#1), one of the three previous defined commands (#2) and the coresponding counter (#3) to redefine #1, so that it corresponds to #2. See 7.1.3 for example usement.

```
\newcommand{\hwa@parseCounterStyle}[3]{
  \ifthenelse{\equal{#1}{arabic}}{ \renewcommand{#2}{\arabic{#3}} }{
    \ifthenelse{\equal{#1}{roman}}{ \renewcommand{#2}{\roman{#3}} }{
      \ifthenelse{\equal{#1}{alph}}{ \renewcommand{#2}{\alph{#3}} }{
        \ifthenelse{\equal{#1}{Alph}}{ \renewcommand{#2}{\Alph{#3}} }{
          \ifthenelse{\equal{#1}{Roman}}{
            \renewcommand{#2}{\Roman{#3}} }{
            \ClassError{HomeworkAssignment}{Invalid Value #1 for
              option Counter-Styling}{Possible Values are alph,
              arabic, Arabic, roman or Roman.}  } } } } } }
```

7.1.3 Counter–Commands II

ounter--Style ParserCommands II

Redefines the three counter-commands

```
\hwa@parseCounterStyle{\hwa@problemsty}{\hwa@problemno}{problem}
\hwa@parseCounterStyle{\hwa@subproblemsty}{\hwa@subproblemno}{subproblem}
\hwa@parseCounterStyle{\hwa@subsubproblemsty}{\hwa@subsubproblemno}{subsubproblem}
```

7.2 Commands

\subject

Defines \kurs. \subject equals \kurs

```
\newcommand{\hwa@kurs}{Kein Kurs}
\newcommand{\subject}[1]{\renewcommand{\hwa@kurs}{#1}}
\newcommand{\kurs}[1]{\subject{#1}}
```

\tutorial

Defines \tutorial. \tutorium equals \tutorial

```
\newcommand{\hwa@tutorium}{}
\newcommand{\tutorial}[1]{\renewcommand{\hwa@tutorium}{#1}}
\newcommand{\tutorium}[1]{\tutorial{#1}}
```

\deadline

Defines \deadline. \abgabe equals \deadline

```
\newcommand{\hwa@abgabe}{\today}
\newcommand{\deadline}[1]{\def\hwa@abgabe{#1}}
\newcommand{\abgabe}[1]{\deadline{#1}}
```

\maketitle

Overrides maketitle.

```

\renewcommand{\maketitle} {
  \begin{centering}
    \huge{\textbf{\hwa@kurs}} {\hrule height 2pt} \vspace{.25cm}
    \large
    Abgabe: \hwa@abgabe\\
    \vspace{.5cm} \hrule \vspace{.25cm}
    \normalsize{\@author}\\
    \vspace{.25cm} \hrule \vspace{.25cm} \normalsize
  \end{centering}
}
```

Defines and initialize all counters.

```
\newcounter{problem} \setcounter{problem}{0}
\newcounter{subproblem}[problem] \setcounter{subproblem}{0}
\newcounter{subsubproblem}[subproblem] \setcounter{subsubproblem}{0}

```

Defines 'plain' sectioning-commands. See 3.2 for more informations.

```
\newcommand{\problem}[1]{\@startsection{problem}%Name
  {1}%Level
  {\z@}%indent
  {-2em \@plus -1em \@minus -1em}%beforeskip
  {1ex \@plus .5ex}%afterskip
  {\normalfont\Large\bfseries}%style
  *{#1} \addcontentsline{toc}{section}{#1} }

\newcommand{\subproblem}[1]{\@startsection{subproblem}%Name
  {2}%Level
  {\z@}%indent
  {-1em \@plus -.5em \@minus -.5em}%beforeskip
  {.5ex \@plus .5ex}%afterskip
  {\normalfont\large\bfseries}%style
  *{#1} \addcontentsline{toc}{subsection}{#1} }

\newcommand{\subsubproblem}[1]{\@startsection{subsubproblem}%Name
  {3}%Level
  {\z@}%indent
  {-.5em}%beforeskip
  {.5em}%afterskip
  {\normalfont\bfseries}%style
  *{#1} }

\newcommand{\solution}[1][]{\@startsection{solution}%Name
  {4}%Level
  {\parindent}%indent
  {-.1em}%beforeskip
  {\z@}%afterskip
  {\normalfont\bfseries}%style
  *{L\"osung\ifthenelse{\equal{#1}{}} {} { #1}:~~ } }

\newcommand{\proof}[1][]{\@startsection{proof}%Name
  {4}%Level
  {\parindent}%indent
  {-.1em}%beforeskip
  {\z@}%afterskip
  {\normalfont\bfseries}%style
  *{Beweis\ifthenelse{\equal{#1} {} } {} { #1}:~~ } }
```

Defines 'better' sectioning commands. See 3.2 and 3.2.2 for more informations.

```
\newcommand{\newproblem}[1][]{\stepcounter{problem}
  \ifthenelse{\equal{#1}{}} { } {\setcounter{problem}{#1}}
```

```
  \problem{Aufgabe \hwa@problemno} }

\newcommand{\newsubproblem}[1][]{\stepcounter{subproblem}
  \ifthenelse{\equal{#1}{}} { } {\setcounter{subproblem}{#1}}
  \subproblem{Aufgabe \hwa@problemno{}.\hwa@subproblemno} }

\newcommand{\newsubsubproblem}[1][]{\stepcounter{subsubproblem}
  \ifthenelse{\equal{#1}{}} { } {\setcounter{subsubproblem}{#1}}
  \subsubproblem{\hwa@subsubproblemno)} }
```

The End

```
\endinput
```