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 LaTeX Warning: 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

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*This document corresponds to HomeworkAssignment v1.5.2,dated 2017\04\30.

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

v1.5.2 - 2017/04/29 Add version-number

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.

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

Loads required Packages

```
5 \RequirePackage{suffix} \RequirePackage{fancyhdr}
6 \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.

```
7
8 \fancypagestyle{firstpage}{
9   %
10   \fancyhf{}
11   % clear all six fields
12   \renewcommand{\headrulewidth}{.7pt}
13   \renewcommand{\footrulewidth}{0pt} \fancyfoot[RE,LO]{\thepage}
14   \fancyhead[L]{\hwa@tutorium } \fancyhead[R]{\@date } }
15 \fancypagestyle{followingpage}{
16   %
17   \fancyhf{}
18   % clear all six fields
19   \fancyhead[RE,LO]{\@author} \fancyhead[LE,RO]{\hwa@kurs\\ Abgabe:
20     \hwa@abgabe} \fancyfoot[RE,LO]{\thepage}
21   \renewcommand{\headrulewidth}{0.7pt}
22   \renewcommand{\footrulewidth}{0pt} } \pagestyle{followingpage}
23 \AtBeginDocument{ \thispagestyle{firstpage}
24   \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

```
25 \newcommand{\hwa@problemno}{\arabic{problem}}
26 \newcommand{\hwa@subproblemno}{\alph{subproblem}}
27 \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.

```
28 \newcommand{\hwa@parseCounterStyle}[3]{
29   \ifthenelse{\equal{#1}{arabic}}{ \renewcommand{#2}{\arabic{#3}} }{
30     \ifthenelse{\equal{#1}{roman}}{ \renewcommand{#2}{\roman{#3}} }{
31       \ifthenelse{\equal{#1}{alph}}{ \renewcommand{#2}{\alph{#3}} }{
32         \ifthenelse{\equal{#1}{Alph}}{ \renewcommand{#2}{\Alph{#3}} }{
33           \ifthenelse{\equal{#1}{Roman}}{
34             \renewcommand{#2}{\Roman{#3}} }{
35             \ClassError{HomeworkAssignment}{Invalid Value #1 for
36               option Counter-Styling}{Possible Values are alph,
37               arabic, Arabic, roman or Roman.}  } } } } } }
```

7.1.3 Counter–Commands II

Redefines the three counter-commands

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

7.2 Commands

\subject Defines \kurs. \subject equals \kurs

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

\tutorial Defines \tutorial. \tutorium equals \tutorial

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

\deadline Defines \deadline. \abgabe equals \deadline

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

\maketitle Overrides maketitle.

```
50
51 \renewcommand{\maketitle} {
52   \begin{centering}
53     \huge{\textbf{\hwa@kurs}} {\hrule height 2pt} \vspace{.25cm}
54     \large
55     Abgabe: \hwa@abgabe\\
56     \vspace{.5cm} \hrule \vspace{.25cm}
57     \normalsize{\@author}\\
58     \vspace{.25cm} \hrule \vspace{.25cm} \normalsize
59   \end{centering}
60 }
```

Defines and initialize all counters.

```
61 \newcounter{problem} \setcounter{problem}{0}
62 \newcounter{subproblem}[problem] \setcounter{subproblem}{0}
63 \newcounter{subsubproblem}[subproblem] \setcounter{subsubproblem}{0}
64
```

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

```
65 \newcommand{\problem}[1]{\@startsection{problem}%Name
66   {1}%Level
67   {\z@}%indent
68   {-2em \@plus -1em \@minus -1em}%beforeskip
69   {1ex \@plus .5ex}%afterskip
70   {\normalfont\Large\bfseries}%style
71   *{#1} \addcontentsline{toc}{section}{#1} }
72
73 \newcommand{\subproblem}[1]{\@startsection{subproblem}%Name
74   {2}%Level
75   {\z@}%indent
76   {-1em \@plus -.5em \@minus -.5em}%beforeskip
77   {.5ex \@plus .5ex}%afterskip
78   {\normalfont\large\bfseries}%style
79   *{#1} \addcontentsline{toc}{subsection}{#1} }
80
81 \newcommand{\subsubproblem}[1]{\@startsection{subsubproblem}%Name
82   {3}%Level
83   {\z@}%indent
84   {-.5em}%beforeskip
85   {.5em}%afterskip
86   {\normalfont\bfseries}%style
87   *{#1} }
88
89 \newcommand{\solution}[1][]{\@startsection{solution}%Name
90   {4}%Level
91   {\parindent}%indent
92   {-.1em}%beforeskip
93   {\z@}%afterskip
94   {\normalfont\bfseries}%style
95   *{L\"osung\ifthenelse{\equal{#1}{}} {} { #1}:~~ } }
96
97 \newcommand{\proof}[1][]{\@startsection{proof}%Name
98   {4}%Level
99   {\parindent}%indent
100   {-.1em}%beforeskip
101   {\z@}%afterskip
102   {\normalfont\bfseries}%style
103   *{Beweis\ifthenelse{\equal{#1} {} } {} { #1}:~~ } }
```

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

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

```
106    \problem{Aufgabe \hwa@problemno} }
107
108 \newcommand{\newsubproblem}[1][]{\stepcounter{subproblem}
109    \ifthenelse{\equal{#1}{}} { } {\setcounter{subproblem}{#1}}
110    \subproblem{Aufgabe \hwa@problemno{}.\hwa@subproblemno} }
111
112 \newcommand{\newsubsubproblem}[1][]{\stepcounter{subsubproblem}
113    \ifthenelse{\equal{#1}{}} { } {\setcounter{subsubproblem}{#1}}
114    \subsubproblem{\hwa@subsubproblemno)} }
115
```

The End

```
116 \endinput
```