

The HomeworkAssignment class*

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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 very best.

2 Options

`problemstyle=<1>` These options allow the customizatuion of the displayed numbers. For Example, if
`subproblemstyle=<1>` `problemstyle=Roman`, `subproblemstyle=arabic`, `subsubproblemstyle=roman`
`subsubproblemstyle=<1>` 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`, \LaTeX raises 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` Sets the subject of the document. Takes the subject as argument. Standard Value
`\kurs`

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

is “Kein Kurs”
`\kurs` is deprecated.

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

`\deadline` Sets the deadline of the document. Takes it as an argument. Standard value
`\abgabe` 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` These commands work like their counterpart in article, except that there will be
`\subproblem` no number, nor will they increase a counter. Nevertheless, they will be shown in
`\subsubproblem` the table of contents.

`\solution` They work like Paragraph, but do not take an argument, instead they print
`\proof` 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` These commands require no argument, and automatically create a numbered
`\newsproblem` title. The optional Argument is the new value for the corresponding counter.
`newsproblem`

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 very boring, but I have not found a solution to create a .cls-file without including the implementation into the document. Loads L^AT_EX 2_ε 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 corresponding 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

Counter--Style ParserCommands 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. \tutorial equals \tutorial
44 \newcommand{\hwa@tutorial}{}
45 \newcommand{\tutorial}[1]{\renewcommand{\hwa@tutorial}{#1}}
46 \newcommand{\tutorial}[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{\newsbsubproblem}[1] [] {\stepcounter{subsubproblem}
113 \ifthenelse{\equal{#1}{}} { } {\setcounter{subsubproblem}{#1}}
114 \subsubproblem{\hwa@subsubproblemno)} }
115
116 \endinput

```

The End