

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

<code>\subject</code>	Sets the subject of the document. Takes the subject as argument. Standard Value
<code>\kurs</code>	<hr/> *This document corresponds to HomeworkAssignment v1.5.2,dated 2017\04\30.

is “Kein Kurs”
`\kurs` is deprecated.

`\tutorial` Sets the tutorial of the author. Takes it as an argument. Standard Value is 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 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 no number, nor will they increase a counter. Nevertheless, they will be shown in the table of contents.
`\subproblem`
`\subsubproblem`

`\solution` They work like Paragraph, but do not take an argument, instead they print out “Lösung”, “Beweis” “Gegeben”, and “Zu zeigen”, respectively¹. They are not mentioned in the table of contents.
`\proof`
`\given`
`\toShow`

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 title. The optional Argument is the new value for the corresponding counter.
`\newsproblem`
`newsproblem`

4 Pagestyle

4.1 Headers

¹As of v1.6, Translations are added, depending on the chosen Language, there may be an other Text displayed.
See 7.2 for all Translations

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

v1.6 - 2017/05/02 Add Translations (German and English)
Add `\given` and `\toShow`

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_EX2e and sets the Version Loads the `article`, which is the base-class.

7.1 Packages Options

```
1 \RequirePackage{kvoptions}
2 \SetupKeyvalOptions{ family=hwa,
3   prefix=hwa@ }
4 \DeclareStringOption[arabic]{problemsty}
5 \DeclareStringOption[alph]{subproblemsty}
6 \DeclareStringOption[roman]{subsubproblemsty}
7 % Redefine the article-options
8 %   \begin{macrocode}
9 \DeclareDefaultOption{\PassOptionsToClass{\CurrentOptionKey}{article}}

Processes the Options and loads article
10 \ProcessKeyvalOptions*
11 \LoadClass{article}

Loads required Packages
12 \RequirePackage{suffix} \RequirePackage{fancyhdr}
13 \RequirePackage{ifthen}
14 \RequirePackage{translations}
```

7.2 Translations

Load translations, currently supports English and German, Fallback is German

```
15 \DeclareTranslationFallback{aufgabe}{Aufgabe}
16 \DeclareTranslationFallback{loesung}{L"osung}
17 \DeclareTranslationFallback{beweis}{Beweis}
18 \DeclareTranslationFallback{uebungsgruppe}{\ "Ubungsgruppe}
19 \DeclareTranslationFallback{abgabe}{Abgabe}
20 \DeclareTranslationFallback{zuZeigen}{Zu zeigen}
21 \DeclareTranslationFallback{gegeben}{Gegeben}
22
23 \DeclareTranslation{German}{aufgabe}{Aufgabe}
24 \DeclareTranslation{German}{loesung}{L"osung}
25 \DeclareTranslation{German}{beweis}{Beweis}
26 \DeclareTranslation{German}{uebungsgruppe}{\ "Ubungsgruppe}
27 \DeclareTranslation{German}{abgabe}{Abgabe}
28 \DeclareTranslation{German}{zuZeigen}{Zu zeigen:}
29 \DeclareTranslation{German}{gegeben}{Gegeben}
30
31 \DeclareTranslation{English}{aufgabe}{Problem}
32 \DeclareTranslation{English}{loesung}{Solution}
33 \DeclareTranslation{English}{beweis}{Proof}
34 \DeclareTranslation{English}{uebungsgruppe}{Tutorial}
35 \DeclareTranslation{English}{abgabe}{Deadline}
```

```

36 \DeclareTranslation{English}{zuZeigen}{To show}
37 \DeclareTranslation{German}{gegeben}{Given}

```

7.3 Headers Footers

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.

```

38
39 \fancypagestyle{firstpage}{
40   %
41   \fancyhf{}
42   % clear all six fields
43   \renewcommand{\headrulewidth}{.7pt}
44   \renewcommand{\footrulewidth}{0pt} \fancyfoot[RE,LO]{\thepage}
45   \fancyhead[L]{\hwa@tutorium } \fancyhead[R]{\@date } }
46 \fancypagestyle{followingpage}{
47   %
48   \fancyhf{}
49   % clear all six fields
50   \fancyhead[RE,LO]{\@author} \fancyhead[LE,RO]{\hwa@kurs\ \GetTranslation{abgabe}:
51     \hwa@abgabe} \fancyfoot[RE,LO]{\thepage}
52   \renewcommand{\headrulewidth}{0.7pt}
53   \renewcommand{\footrulewidth}{0pt} } \pagestyle{followingpage}
54 \AtBeginDocument{ \thispagestyle{firstpage}
55   \setlength{\headheight}{25pt} }

```

7.4 Internal commands

7.4.1 Counter-Commands

Counter--Commands These are used to output the Exercise numbers in the desired style

```

56 \newcommand{\hwa@problemno}{\arabic{problem}}
57 \newcommand{\hwa@subproblemno}{\alph{subproblem}}
58 \newcommand{\hwa@subsubproblemno}{\roman{subsubproblem}}

```

7.4.2 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 7.3.3 for example usement.

```

59 \newcommand{\hwa@parseCounterStyle}[3]{
60   \ifthenelse{\equal{#1}{arabic}}{ \renewcommand{#2}{\arabic{#3}} }{
61     \ifthenelse{\equal{#1}{roman}}{ \renewcommand{#2}{\roman{#3}} }{
62       \ifthenelse{\equal{#1}{alph}}{ \renewcommand{#2}{\alph{#3}} }{
63         \ifthenelse{\equal{#1}{Alph}}{ \renewcommand{#2}{\Alph{#3}} }{
64           \ifthenelse{\equal{#1}{Roman}}{
65             \renewcommand{#2}{\Roman{#3}} }{

```

```

66          \ClassError{HomeworkAssignment}{Invalid Value #1 for
67            option Counter-Styling}{Possible Values are alph,
68            arabic, Arabic, roman or Roman.} } } } } } }

```

7.4.3 Counter-Commands II

ounter--Style ParserCommands II Redefines the three counter-commands

```

69 \hwa@parseCounterStyle{\hwa@problemsty}{\hwa@problemno}{problem}
70 \hwa@parseCounterStyle{\hwa@subproblemsty}{\hwa@subproblemno}{subproblem}
71 \hwa@parseCounterStyle{\hwa@subsubproblemsty}{\hwa@subsubproblemno}{subsubproblem}

```

7.5 Commands

```

\subject Defines \kurs. \subject equals \kurs
72 \newcommand{\hwa@kurs}{?\GetTranslation{subject}??}
73 \newcommand{\subject}[1]{\renewcommand{\hwa@kurs}{#1}}
74 \newcommand{\kurs}[1]{\subject{#1}}

\tutorial Defines \tutorial. \tutorial equals \tutorial
75 \newcommand{\hwa@tutorial}{?\GetTranslation{uebungsgruppe}??}
76 \newcommand{\tutorial}[1]{\renewcommand{\hwa@tutorial}{#1}}
77 \newcommand{\tutorial}[1]{\tutorial{#1}}

\deadline Defines \deadline. \abgabe equals \deadline
78 \newcommand{\hwa@abgabe}{\today}
79 \newcommand{\deadline}[1]{\def\hwa@abgabe{#1}}
80 \newcommand{\abgabe}[1]{\deadline{#1}}

\maketitle Overrides maketitle.
81
82 \renewcommand{\maketitle} {
83   \begin{centering}
84     \huge{\textbf{\hwa@kurs}} {\hrule height 2pt} \vspace{.25cm}
85     \large
86     \GetTranslation{abgabe}: \hwa@abgabe\
87     \vspace{.5cm} \hrule \vspace{.25cm}
88     \normalsize{\@author}\
89     \vspace{.25cm} \hrule \vspace{.25cm} \normalsize
90   \end{centering}
91 }

Defines and initialize all counters.
92 \newcounter{problem} \setcounter{problem}{0}
93 \newcounter{subproblem}[problem] \setcounter{subproblem}{0}
94 \newcounter{subsubproblem}[subproblem] \setcounter{subsubproblem}{0}
95

```

Defines ‘plain’ sectioning-commands. See 3.2 for more informations.

```

96 \newcommand{\problem}[1]{\@startsection{problem}%Name
97   {1}%Level
98   {\z@}%indent
99   {-2em \@plus -1em \@minus -1em}%beforeskip
100  {1ex \@plus .5ex}%afterskip
101  {\normalfont\Large\bfseries}%style
102  *{#1} \addcontentsline{toc}{section}{#1} }
103
104 \newcommand{\subproblem}[1]{\@startsection{subproblem}%Name
105   {2}%Level
106   {\z@}%indent
107   {-1em \@plus -.5em \@minus -.5em}%beforeskip
108   {.5ex \@plus .5ex}%afterskip
109   {\normalfont\large\bfseries}%style
110   *{#1} \addcontentsline{toc}{subsection}{#1} }
111
112 \newcommand{\subsubproblem}[1]{\@startsection{subsubproblem}%Name
113   {3}%Level
114   {\z@}%indent
115   {-.5em}%beforeskip
116   {.5em}%afterskip
117   {\normalfont\bfseries}%style
118   *{#1} }
119
120 \newcommand{\solution}[1] [] {\@startsection{solution}%Name
121   {4}%Level
122   {\parindent}%indent
123   {-.1em}%beforeskip
124   {\z@}%afterskip
125   {\normalfont\bfseries}%style
126   *{\GetTranslation{loesung}\ifthenelse{\equal{#1}{}} {} { { #1}:~~ } }
127
128 \newcommand{\proof}[1] [] {\@startsection{proof}%Name
129   {4}%Level
130   {\parindent}%indent
131   {-.1em}%beforeskip
132   {\z@}%afterskip
133   {\normalfont\bfseries}%style
134   *{\GetTranslation{beweis}\ifthenelse{\equal{#1}{}} {} { { #1}:~~ } }
135
136 \newcommand{\toShow}[1] [] {\@startsection{to show}%Name
137   {4}%Level
138   {\parindent}%indent
139   {-.1em}%beforeskip
140   {\z@}%afterskip
141   {\normalfont\bfseries}%style
142   *{\GetTranslation{zuZeigen}\ifthenelse{\equal{#1}{}} {} { { #1}:~~ } }
143

```

```

144 \newcommand{\given}[1][\@startsection{given}%Name
145   {4}%Level
146   {\parindent}%indent
147   {-1em}%beforeskip
148   {\z@}%afterskip
149   {\normalfont\bfseries}%style
150   *{\GetTranslation{gegeben}\ifthenelse{\equal{#1} {} } {} { #1}:~~ } }
151
    Defines ‘better’ sectioning commands. See 3.2 and 3.2.2 for more informations.
152 \newcommand{\newproblem}[1][\stepcounter{problem}
153   \ifthenelse{\equal{#1}{} } {} {\setcounter{problem}{#1}}
154   \problem{\GetTranslation{aufgabe} \hwa@problemno} }
155
156 \newcommand{\newsubproblem}[1][\stepcounter{subproblem}
157   \ifthenelse{\equal{#1}{} } {} {\setcounter{subproblem}{#1}}
158   \subproblem{\GetTranslation{Aufgabe} \hwa@problemno}.\hwa@subproblemno }
159
160 \newcommand{\newsbsubproblem}[1][\stepcounter{subsubproblem}
161   \ifthenelse{\equal{#1}{} } {} {\setcounter{subsubproblem}{#1}}
162   \subsubproblem{\hwa@subsubproblemno} }
163
    The End
164 \endinput

```