

# 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` 

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\*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  
`\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

**v1.6 - 2017/05/02** Add Translations (German and English)

## 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<sup>A</sup>T<sub>E</sub>X2<sub>ε</sub> and sets the Version Loads the article, which is the base-class.

```

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}

```

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
21 \DeclareTranslation{German}{aufgabe}{Aufgabe}
22 \DeclareTranslation{German}{loesung}{L"osung}
23 \DeclareTranslation{German}{beweis}{Beweis}
24 \DeclareTranslation{German}{uebungsgruppe}{\ "Ubungsgruppe}
25 \DeclareTranslation{German}{abgabe}{Abgabe}
26
27 \DeclareTranslation{English}{aufgabe}{Problem}
28 \DeclareTranslation{English}{loesung}{Solution}
29 \DeclareTranslation{English}{beweis}{Proof}
30 \DeclareTranslation{English}{uebungsgruppe}{Tutorial}
31 \DeclareTranslation{English}{abgabe}{Deadline}

```

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.

```

32
33 \fancypagestyle{firstpage}{
34   %
35   \fancyhf{}
36   % clear all six fields

```

```

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

```

50 \newcommand{\hwa@problemno}{\arabic{problem}}
51 \newcommand{\hwa@subproblemno}{\alph{subproblem}}
52 \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.

```

53 \newcommand{\hwa@parseCounterStyle}[3]{
54 \ifthenelse{\equal{#1}{arabic}}{ \renewcommand{#2}{\arabic{#3}} }{
55 \ifthenelse{\equal{#1}{roman}}{ \renewcommand{#2}{\roman{#3}} }{
56 \ifthenelse{\equal{#1}{alph}}{ \renewcommand{#2}{\alph{#3}} }{
57 \ifthenelse{\equal{#1}{Alph}}{ \renewcommand{#2}{\Alph{#3}} }{
58 \ifthenelse{\equal{#1}{Roman}}{
59 \renewcommand{#2}{\Roman{#3}} }{
60 \ClassError{HomeworkAssignment}{Invalid Value #1 for
61 option Counter-Styling}{Possible Values are alph,
62 arabic, Arabic, roman or Roman.} } } } } }

```

### 7.1.3 Counter-Commands II

**Counter--Style ParserCommands II** Redefines the three counter-commands

```

63 \hwa@parseCounterStyle{\hwa@problemsty}{\hwa@problemno}{problem}
64 \hwa@parseCounterStyle{\hwa@subproblemsty}{\hwa@subproblemno}{subproblem}
65 \hwa@parseCounterStyle{\hwa@subsubproblemsty}{\hwa@subsubproblemno}{subsubproblem}

```

## 7.2 Commands

```

\subject Defines \kurs. \subject equals \kurs
66 \newcommand{\hwa@kurs}{?\GetTranslation{subject}??}
67 \newcommand{\subject}[1]{\renewcommand{\hwa@kurs}{#1}}
68 \newcommand{\kurs}[1]{\subject{#1}}

\tutorial Defines \tutorial. \tutorium equals \tutorial
69 \newcommand{\hwa@tutorium}{?\GetTranslation{uebungsgruppe}??}
70 \newcommand{\tutorial}[1]{\renewcommand{\hwa@tutorium}{#1}}
71 \newcommand{\tutorium}[1]{\tutorial{#1}}

\deadline Defines \deadline. \abgabe equals \deadline
72 \newcommand{\hwa@abgabe}{\today}
73 \newcommand{\deadline}[1]{\def\hwa@abgabe{#1}}
74 \newcommand{\abgabe}[1]{\deadline{#1}}

\maketitle Overrides maketitle.
75
76 \renewcommand{\maketitle} {
77   \begin{centering}
78     \huge{\textbf{\hwa@kurs}} {\hrule height 2pt} \vspace{.25cm}
79     \large
80     \GetTranslation{abgabe}: \hwa@abgabe\\
81     \vspace{.5cm} \hrule \vspace{.25cm}
82     \normalsize{\@author}\\
83     \vspace{.25cm} \hrule \vspace{.25cm} \normalsize
84   \end{centering}
85 }

Defines and initialize all counters.
86 \newcounter{problem} \setcounter{problem}{0}
87 \newcounter{subproblem}[problem] \setcounter{subproblem}{0}
88 \newcounter{subsubproblem}[subproblem] \setcounter{subsubproblem}{0}
89

Defines ‘plain’ sectioning-commands. See 3.2 for more informations.
90 \newcommand{\problem}[1]{\@startsection{problem}%Name
91   {1}%Level
92   {\z@}%indent
93   {-2em \@plus -1em \@minus -1em}%beforeskip
94   {1ex \@plus .5ex}%afterskip
95   {\normalfont\Large\bfseries}%style
96   *{#1} \addcontentsline{toc}{section}{#1} }
97
98 \newcommand{\subproblem}[1]{\@startsection{subproblem}%Name
99   {2}%Level
100   {\z@}%indent
101   {-1em \@plus -.5em \@minus -.5em}%beforeskip
102   {.5ex \@plus .5ex}%afterskip

```

```

103 {\normalfont\large\bfseries}%style
104 *{#1} \addcontentsline{toc}{subsection}{#1} }
105
106 \newcommand{\subsubproblem}[1]{\@startsection{subsubproblem}%Name
107 {3}%Level
108 {\z@}%indent
109 {- .5em}%beforeskip
110 {.5em}%afterskip
111 {\normalfont\bfseries}%style
112 *{#1} }
113
114 \newcommand{\solution}[1][\@startsection{solution}%Name
115 {4}%Level
116 {\parindent}%indent
117 {- .1em}%beforeskip
118 {\z@}%afterskip
119 {\normalfont\bfseries}%style
120 *{\GetTranslation{loesung}\ifthenelse{\equal{#1}{}} {} { #1}:~~ } }
121
122 \newcommand{\proof}[1][\@startsection{proof}%Name
123 {4}%Level
124 {\parindent}%indent
125 {- .1em}%beforeskip
126 {\z@}%afterskip
127 {\normalfont\bfseries}%style
128 *{\GetTranslation{beweis}\ifthenelse{\equal{#1} {} } {} { #1}:~~ } }

```

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

```

129 \newcommand{\newproblem}[1][\stepcounter{problem}
130 \ifthenelse{\equal{#1}{}} {} {} {\setcounter{problem}{#1}}
131 \problem{\GetTranslation{aufgabe} \hwa@problemno} }
132
133 \newcommand{\newsproblem}[1][\stepcounter{subproblem}
134 \ifthenelse{\equal{#1}{}} {} {} {\setcounter{subproblem}{#1}}
135 \subproblem{\GetTranslation{Aufgabe} \hwa@problemno}.\hwa@subproblemno} }
136
137 \newcommand{\newsproblem}[1][\stepcounter{subsubproblem}
138 \ifthenelse{\equal{#1}{}} {} {} {\setcounter{subsubproblem}{#1}}
139 \subsubproblem{\hwa@subsubproblemno} } }
140

```

*The End*

```

141 \endinput

```