The `uhhassignment` document class

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Abstract

The `uhhassignment` document class is a document class designed to be used for assignments in university (or school). The class predominantly implements a custom layout for titles but also features some helpful new commands. The class was originally designed to be used at the university of Hamburg.

Change History

v1.0
General: Initial version  .........  1

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1 Usage

1.1 Class Options

Currently the \uhhassignment class supports three (or rather six) options:

By default the \uhhassignment class expects the assignment sheets to be numbered and issues a warning if the \sheetno is missing. However if you do not want to specify a sheet number you can use the \unnumberedsheets class option to suppress the warning. The package option also removes any text indicating the sheet number from the output.

The opposite option \numberedsheets is used by default.

You can specify the \repeatauthor class option to display a short version of the \author on each page in the footer (including the first page). The short version of the author is specified with the \author command as an optional first parameter. By default the normal \author is used as short author as well. By default the short author will not be displayed at all.

You can pass \shorttitle class option to display the short university name and course name in the title. You could also explicitly pass \longtitle which is the default.

Similarly you can pass \shortheader or \longheader to display the short or regular university and course name in the header on each subsequent page.

1.2 The Title

The main feature of the \uhhassignment class is the custom title layout. The layout implements some new fields like the name of the university (or school), the name of the teacher or the number of the exercise sheet. The full list of supported fields is listed below. The actual title layout may be different depending on which of the following fields are actually specified.

\university \university\{\langle short uni\rangle\}\{\langle uni\rangle\} Lets you specify the name of the university (or school). The default value is Universität Hamburg.

\course \course\{\langle short course\rangle\}\{\langle course\rangle\} Lets you specify the name of the course of the assignment. The course is sometimes referred to as a module.

\teacher \teacher\{\langle teacher\rangle\} Lets you specify the name of the teacher or teachers of the course. If you want to specify multiple teachers it is recommended that you separate them with the \\ command.

\group \group\{\langle group number\rangle\} The exercises for many university courses are divided into multiple exercise groups. Using this command you can specify the number of your group.

\sheetno \sheetno\{\langle sheet number\rangle\} Lets you specify the current exercise sheet. If no \title is provided the sheet number is used as title of the document.
In addition to the above new commands you can also specify a \title, \date and one or more \authors.

\id Sometimes you have to provide your student ID with your solutions to an exercise sheet. The uhhasignment class provides the \id{⟨id⟩} command for this case. This command should be used when specifying the authors with the \author command. It might look like this: \author{John Doe\id{1234567}}

1.3 Tasks and Subtasks

The uhhasignment class is based on srcarct from the KOMA packages so its main sectioning level are sections (not chapters). Sections and subsections however do not always accurately reflect the semantics of solutions to an assignment. Instead the uhhasignment class provides the following commands:

\task \task{⟨task number⟩}{⟨task name⟩}
The \task command replaces the \section command. It incrementally numbers the tasks (starting at 1). If you want to skip a task you can use the optional \tasknumber argument to set the task number to a specific value. Subsequent tasks are then incrementally numbered.

\subtask \subtask{⟨task number⟩}{⟨task name⟩}
\subsubtask \subsubtask{⟨task number⟩}{⟨task name⟩}
The \subtask and \subsubtask replace \subsection and \subsubsection respectively. They work analogous to \task.

The standard sectioning commands are not modified by the uhhasignment class so it is still possible to use them. In fact the \task commands do create sections and subsections internally. You should however be careful in using \sections yourself because it may be difficult to distinguish \tasks from \sections.

1.4 Todos

The uhhasignment class offers rudimentary support for todo notes. Currently todo support is very limited and may not work in some cases.

\todo \todo{⟨todo text⟩}
The \todo command does two things:

1. It puts a todo marker in the text where the \todo command is specified. The todo marker is defined by the \todomark command.

2. It puts a todo note at the page margin so that you can easily spot open todos in the PDF. The text of the todo note can be customized using the ⟨todo text⟩ optional argument.

2 Implementation

In addition to the options provided by srcarct the uhhasignment class supports the following options.
The \uhhassignment class is based on \texttt{scrartcl}.

2.1 Dependencies

\texttt{\RequirePackage[utf8]{inputenc}} \% UTF-8 Encoding
\texttt{\RequirePackage{cmap}} \% Special Characters
\texttt{\RequirePackage[T1]{fontenc}} \% Font Encoding
\texttt{\RequirePackage[ngerman]{babel}} \% German Language
\texttt{\RequirePackage{etoolbox}} \% Programming
\texttt{\RequirePackage{calc}} \% Calculations
\texttt{\RequirePackage[a4paper,}
2.2 Constants

The following constants are used throughout the template. They can be overridden for customizations.

\def\uhhassignment@sheetid{Aufgabenblatt}
\def\uhhassignment@groupid{Übungsgruppe}

2.3 Definitions

2.3.1 Title Elements

\university The \university command stores the name of the university for later use.

\newcommand{\university}[2][]{
  \ifstrempty{#1}{
    \gdef@shortuniversity{#2}
  }{
    \gdef@shortuniversity{#1}
  }
  \gdef@university{#2}
}

\course The \course command stores the name of the course for later use.

\newcommand{\course}[2][]{
  \ifstrempty{#1}{
    \gdef@shortcourse{#2}
  }{
    \gdef@shortcourse{#1}
  }
  \gdef@course{#2}
}

\teacher The \teacher command stores the name of the teacher for later use.
The \command{\group} stores the name of the group for later use.

The \command{\sheetno} command stores the assignment sheet number for later use.

The \command{\id} macro prints the id of an author. The default implementation puts the id on a new line in parentheses.

The \command{\author} command is overridden by this class to support a short author that may be printed at the bottom of each page.

The default values for most fields are empty. The default university is the university of Hamburg.
2.3.2 Todos

\todomark The \todomark is placed in the text when the \todo command is used. The default implementation draws a purple box with the text 'Todo' inside.

\newcommand{\todomark}{%\colorbox{purple}{%\textnormal{\ttfamily bfseries color(white)}% TODO}%\}%}
\todo The \todo macro places the \todomark and puts a todo text in a marginpar.

\newcommand{\todo}[1][{}]{%\ifstrempty{#1}{%\stepcounter{task}{% \def\todotext{Todo}\}%\}%\def\todotext{Todo: #1}\}%\%\%\ifstrempty{#2}{% \section{Aufgabe \arabic{task}}%\}%\%\%\%\%\}%}

2.3.3 Tasks

The task mechanism of the uhhassignment class implements its own numbering mechanism. This is necessary because the task numbers do not necessarily correlate with section numbers.

\setcounter{secnumdepth}{0}
\task The \task command is basically just a wrapper around a section with a semi-customizable section title.

\newcommand{\task}[2][{}]{%\ifstrempty{#1}{%\stepcounter{task}{% \def\stepcounter{task}\}%\}%\%\%\%\%\%\%\ifstrempty{#2}{% \section{Aufgabe \arabic{task}}%\}%\}%\}
\subtask The equivalent of \subsection for the uhhassignment class. \subtask essentially wraps \subsection with a semi-customizable title.
\begin{Verbatim}
\newcounter{subtask}[task]
\newcommand{\subtask}[2][]{%
  \ifstrempty{#1}{%  \stepcounter{subtask}%
    }{%  \setcounter{subtask}{#1}%
  }%
  \ifstrempty{#2}{%  \subsection{Teilaufgabe \arabic{task}.\arabic{subtask}}%
    }{%  \subsection{\arabic{task}.\arabic{subtask}. #2}%
  }%
}\end{Verbatim}

\subsubtask The equivalent of \subsubsection for the uhhassignment class. \subsubtask essentially wraps \subsection with a semi-customizable title. It probably is not neccessary to use this very often.
\begin{Verbatim}
\newcounter{subsubtask}[subtask]
\newcommand{\subsubtask}[2][]{%
  \ifstrempty{#1}{%  \stepcounter{subsubtask}%
    }{%  \setcounter{subsubtask}{#1}%
  }%
  \ifstrempty{#2}{%  \subsection{\arabic{task}.\arabic{subtask}.\arabic{subsubtask}}%
    }{%  \subsubsection{\arabic{task}.\arabic{subtask}.\arabic{subsubtask}. #2}%
  }%
}\end{Verbatim}

2.4 Page Setup

The uhhassignment class defines its own header and footer using \texttt{scrlayer-scrpage}. The default setup shows the course, sheet number, university and date on every page.
\begin{Verbatim}
\setlength{\headheight}{50pt}
\pagestyle{scrheadings}
\clearpairofpagestyles
\ifuhhassignment@shortheader
  \ifuhhassignment@numberedsheets
    \ihead{\textbf{\@shortcourse}\\\uhhassignment@sheetid{} \@sheetno}
  \else
    \ihead{\textbf{\@shortcourse}}
\end{Verbatim}
2.5 Layout

The \uhhassignment class overrides some font settings and adjusts the paragraph spacing to create a more distinct layout.

\setlength{\parskip}{5pt}
\setkomafont{section}{\normalfont\bfseries\LARGE}
\setkomafont{subsection}{\normalfont\bfseries\Large}
\RedefineSectionCommands[afterskip=.25\baselineskip]{section}
\RedefineSectionCommands[beforeskip=0.5\baselineskip, afterskip=.125\baselineskip]{subsection}

\maketitle

The \uhhassignment class completely redefines the \maketitle macro. This implementation actually defines the layout of the final title depending on which information was specified by the user (group number, a title, ...).

We differentiate two states of the title. If the user does not specify a title and does not specify a group the title will be rearranged to not display too much empty space. This is implemented via the ifextended definition.

\renewcommand*{\maketitle}{% 
\thispagestyle{plain} %
First we define the different layout parts. The title has six slots each of which can hold a piece of text:

**Top Left** On the top left the course name is printed in a bold font.

**Top Right** On the top right the name of the university is printed in a bold font.

**Meta Left** Below the course name a piece of information is printed. The contents of this slot depend on the specified information and can be either the group number or the teacher.

**Meta Right** Similar to meta left but below the university name. This slot typically holds the teacher or the date.

**Title Left** Above the actual title there is a row of secondary titles. On the left of this row the sheet number is printed.

**Title Right** Similarly to title left this slot may contain the date.

Below the header the actual document title and the author(s) are printed. If no \texttt{title} is specified the sheet number becomes the title (\texttt{title} however remains empty).

\begin{verbatim}
232  \ifdefempty{\@title}{%
233    \ifdefempty{\@group}{%
234      \def\metaleft{\@teacher}%
235      \def\metaright{\@date}%
236      \def\titleright{}%
237      \extendedfalse
238    }%
239    \def\metaleft{\uhhassignment@sheetid \@group}%
240    \def\metaright{\@teacher}%
241    \def\titleright{\@date}%
242  }%
243  \def\titleleft{}%
244  \ifdefempty{\unif\numberedsheets}{%
245    \def\title{\uhhassignment@sheetid \@sheetno}%
246  }%
247  \else
248    \ifdefempty{\@title}{%
249    }%
\end{verbatim}
The following code prints the title with the information specified above. Depending on the value of \ifextended the title will be longer or shorter.

Each field (heading, secondary title, title, author) is put in a separate group to avoid interference.
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