Package ethuebung **for ETH Exercise Sheets**

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This package provides a unified way of typing exercises for ETH Zurich. While you type in logically all aspects of your exercise using provided LaTeX macros (title, text, hints, solution, etc.), it is rendered according to some standard style (yet remaining highly customizable), and provides different versions of the sheet for distributing to students (without the solutions), or for TA's (with solutions). Tips sheets can also be generated.

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1 Getting Started

1.1 Installation

The simplest way of installing the `ethuebung` package is to copy the `ethuebung.sty` file at the same location as your exercise sheet LaTeX file. This requires of course making several copies of the file if needed. A cleaner installation is to place the `ethuebung.sty` file somewhere in your `$TEXINPUTS` environment path.

Note that no other file is needed. The ETH logo is embedded into the style file.

1.2 Minimal Template

Here is a minimal template for an exercise sheet.

```
\documentclass[11pt,a4paper]{article}

\usepackage{ethuebung} % comment this and uncomment next line for solutions
%\usepackage[sol]{ethuebung} % uncomment for solutions

\UebungLecture{Microstructures of molten cheese.}
\UebungProf{Prof. Zebigboss}
\UebungSemester{HS 2999}

\UebungsblattNumber{1}

\begin{document}
\MakeUebungHeader

\exercise{Title of the exercise.}

In this exercise, you will be asked to do some work.

\begin{exenumerate}
\item Solve the following equation.
    \begin{align}
        x^2 = 1\ .
    \end{align}
    \hint{There might be more than one solution.}
```

```
    \begin{solution}
        Write here the solution to this exercise.
    \end{solution}
\end{exenumerate}

\end{document}
```

1.3   What This Package Does

This package provides a unified way of typing exercises for ETH Zurich. While you type in logically all aspects of your exercise using provided LaTeX macros (title, text, hints, solution, etc.), it is rendered according to some standard style (yet remaining highly customizable), and provides different versions of the sheet for distributing to students (without the solutions), or for TA's (with solutions). Tips sheets can also be generated.

....

ex numbering

both ex sheet/solution sheet

- eqns in solution numbered by themselves

- can attach pdfs for solution

2   Setting Up The Exercise Sheet

2.1   Lecture, Lecturer, Semester

Setting up the exercise sheet is just a matter of calling a small number of commands before the beginning of your document, in the preamble. See the template given in Sec. 1.2. These lines could be for example:

```
\UebungLecture{Microstructures of molten cheese.}
\UebungProf{Prof. Zebigboss}
\UebungSemester{HS 2999}

\UebungsblattNumber{1}
```

> `\UebungLecture {...}`   This command sets the title of your lecture to the given argument. The lecture title is displayed in the main exercise header.

> `\UebungProf {...}`   Use this command to set the professor or lecturer of the course to the given argument.

`\UebungLecturer{...}`   This command is an exact alias of `\UebungProf`.

`\UebungSemester{...}`   This command sets the semester that will be displayed in the header.

`\UebungsblattNumber{...}`   This sets the exercise sheet number to the given argument. The exercise sheet number usually starts at 1, and increases every week as more exercise sheets are distributed.
The macro `\theUebungsblattNumber` is defined to expand to the given exercise sheet number.

TIP   These commands should be called in the preamble, but they just internally expand to an internal macro definition. So technically they can be called whenever you want. Just call them before calling any other macro that actually uses those values, e.g. `\MakeUebungHeader` . Calling such a macro a second time with a different value overrides the previous value.

`\theUebungsblattNumber`   This macro expands to the current exercise sheet number. Set this macro by calling `\UebungsblattNumber`.
You may use this macro anywhere in your document.

2.2   Exercise Sheet Header

The page header is generated automatically by the package, however you should call the command `\MakeUebungHeader` explicitly at the beginning of the document.

`\MakeUebungHeader`   Draws the main header of the exercise sheet, in three parts, with ETH logo, centered title, and professor/semester displayed on the right. And a horizontal line under those.

The header automatically displays the right title, according to whether the exercise sheet without the solutions or with the solutions is displayed, respectively printing "Series" or "Solutions". The appropriate titles are also automatically displayed in German when the `deutsch` package option is provided.

> TIP   If you want to display some other string, like "Exercise Sheet", this title can be customized using commands \UebungsblattTitleSeries (p. 14) and \UebungsblattTitleSolutions (p. 14). The font can also be changed, use \UebungsblattTitleFont (p. 14).
> The header itself is highly customizable, see Sec. 7.1.

2.3 Exercise Sheet Language: German or English

```
\usepackage[deutsch]{ethuebung} % German version, "Uebungsblatt"
```

will provide you the German version of the exercise sheet. Simply adding the `sol` package option will provide you the "Musterlösung":

```
\usepackage[deutsch,sol]{ethuebung} % German verion, "Musterloesung"
```

> TIP   This package option does nothing else than redefining (re-customizing) the sheet title for exercises and for solutions, the exercise label using the commands \UebungsblattTitleSeries (p. 14) etc. documented in section 7. It also automatically includes the LaTeX `babel` package with the [german] option.

3 Exercises

3.1 \uebung: a new exercise

Use \uebung or \exercise to introduce a new exercise, and specify a title for your exercise.

> \uebung{⟨Exercise Title⟩}   Similar to a LaTeX \section command, this command starts the definition of a new exercise. The exercises are automatically numbered. An adequate label is displayed with the current exercise number, and the exercise title is printed in bold italic font (by default).

The exercise is internally implemented as a LaTeX \paragraph. The numbering is taken care of by an internal counter (`uebcounter`).

The label and title font of the exercise can be highly customized by using or redefining for example the commands \UebungLabel (p. 15), \UebungExTitleFont (p. 15), \theuebcounter (p. 18) etc.

> \exercise{...}   Exactly the same as \uebung.

3.2 The `\begin{exenumerate}`...`\end{exenumerate}` environment

`\begin{exenumerate}` ... `\end{exenumerate}`
     This environment provides a `enumerate`-like environment, with labels (a), (b), ... by default, with which you can split an exercise into several parts. Use `\item` for each part, as for `itemize` and `enumerate`.

Such `\begin{exenumerate}`...`\end{exenumerate}` environments can be nested up to two levels (by default), and the second level will be numbered (by default) (i), (ii), ...

These environments may be broken and resumed, and their numbering will be automatically resumed correctly and reset for each exercise. This is useful to add comments or to introduce new concepts between different parts of an exercise.

For example:

```
Consider the setting in which one applies a positive voltage between
the source and the gate leeds. Answer the following questions.
\begin{exenumerate}
\item % This is (a)
    Calculate quantity blah blah for this setting.

\item % This is (b)
    What happens at the edge of the sample with this setting?

\end{exenumerate}

Now, consider setting a {\em negative} voltage instead.
\begin{exenumerate}
\item % This item will automatically be labelled (c).
    Recalculate the quantity blah blah for this setting.

\end{exenumerate}
```

Last but not least, you can refer to different parts of the exercise with LaTeX's usual `\label{...}` and `\ref{...}` commands, as for example:

```
\begin{exenumerate}
\item % This is item (a)
    \label{expart:FirstQuestion}
    Prove Fermat's big theorem.

\item % This is item (b)
    Convince yourself that question~\ref{expart:FirstQuestion} is
    quite difficult.
    % this will display "Convince yourself that question (a) ..."

\end{exenumerate}
```

You may change the default labelling, (a), (b), ..., by specifying your label format as `\begin{exenumerate}[format]`, for example:

```
\begin{exenumerate}[A)]
\item This is A)
\item This is B)
\end{exenumerate}
```

The syntax is the one used by the `\begin{enumerate}...\end{enumerate}` environment (in the `enumerate`[1] package, or in the `enumitem`[2] package with `shortlabels` options).

> TIP   Internally the package `enumitem` is used, with option `shortlabels`. This allows the use as described above of the (old) `enumerate` syntax, as well as the new (but unfortunately more cryptic and verbose) `enumitem` syntax, `[label=(\roman*)]`.
> See section 7.2 for commands available to customize the `\begin{exenumerate}...\end{exenumerate}` environment, in particular `\UebungLabelEnum`.

You may of couse use usual LaTeX cross-referencing for referring to other exercise parts. It suffices to use a `\label` at the exercise part you want to refer to, and then refer to that exercise part with a usual `\ref` command. This package also provides the command `\exenumfulllabel`, which can be used instead of `\label` if you want the reference to contain both levels of exercise parts in case of nested enumeration. An example usage of these commands:

```
\begin{exenumerate}
\item \label{expart:A} This is exercise part (a).
```

---

[1] http://mirrors.ctan.org/macros/latex/required/tools/enumerate.pdf
[2] http://mirrors.ctan.org/macros/latex/contrib/enumitem/enumitem.pdf

```
\item \label{expart:B} This is exercise part (b), that follows exercise
  part~\ref{expart:A}.
  \begin{exenumerate}
  \item \label{expart:Bi}
    This is exercise sub-part (i) to exercise part (b).
  \item \exenumfulllabel{expart:myfullreferenceToBii}
    \label{expart:simpleRefToBii}
    This is exercise sub-part (ii) to exercise part (b).
  \item \exenumfulllabel{expart:Biii}
    This is exercise sub-part (iii) to exercise part (b).
  \end{exenumerate}
\end{exenumerate}

You can now refer to exercise part~\ref{expart:B} ``(b)'', to exercise
part~\ref{expart:Bi} ``(i)'', to exercise part~\ref{expart:simpleRefToBii}
``(ii)'', or exercise part~\ref{expart:myfullreferenceToBii} ``(b) (ii)'',
or exercise part~\ref{expart:Biii} ``(b) (iii)''.
```

Note that you can put the name you wish inside \label and \exenumfulllabel, and you can combine these as you wish.

In case you may wish to manually reset the exenumerate counter back to zero instead of having it resume on the next occurence of \begin{exenumerate}...\end{exenumerate} , use the command \exenumeratereset. This should normally not be needed, but the command is provided in case you would need it. The numbering is anyway automatically reset to zero for new exercises (i.e., upon each \uebung and \subuebung), and in \begin{loesung}...\end{loesung} environments that are not themselves inside an outer \begin{exenumerate}...\end{exenumerate} environment.

> \exenumeratereset   Manually reset the numbering of the ex-
>   enumerate environment to zero. The next occurrence of
>   \begin{exenumerate}...\end{exenumerate} will start again from
>   "(a)" (or whatever the label was redefined to be).

3.3 Hints

Hints can be introduced with the \hint and \hints commands.

> \hint{...}   Displays some text meant as a hint to the student with a label
>   "Hint". A special font is used (e.g. small and italic)

> `\hints{...}` Same as `\hint`, except uses the label "Hints". Use this when several hints are given at once.

For example:

```
\hint{Remember that a unitary $U$ satisfies
    $UU^\dagger=U^\dagger U=\mathbb{I}$.}
```

or, if there are several hints,

```
\hints{Remember that a unitary $U$ satisfies
    $UU^\dagger=U^\dagger U=\mathbb{I}$.

    Also, a rotation $R$ satisfies $RR^T=R^T R=\mathbb{I}$.
}
```

> TIP You can customize the appearance of the hint text, as well as the label used for hints with the `\UebungHinweisLabel` (p. 16), `\UebungHinweiseLabel` (p. 16), and the `\UebungHinweisFont` (p. 15) commands.

> `\hinweis{...}` This is exactly the same as `\hint`.

> `\hinweise{...}` This is exactly the same as `\hints`.

> (!) Both `\hinweis` and `\hint` produce the same output in the same language, which is the language of the sheet (English by default, or German if the `deutsch` package option was given).

3.4 Splitting exercises into 'Sub-Exercises'

You can split exercises into sub-exercises, in the same spirit as when in a regular LaTeX article you split `\section`'s into `\subsection`'s.

> `\subuebung{...}` Define a sub-exercise, the title of which will be the argument given. This will number the sub-exercise automatically.

> `\subexercise{...}` Exactly the same as `\subuebung`

The following example:

```
\exercise{Quantization of the Electromagnetic Field.}
In this exercise, we will learn to quantize the electromagnetic field.

\subexercise{Classical Case.}
First, here are some questions about classical E-M fields...

...

\subexercise{Quantum Case.}
Now we will quantize the E-M field...

...
```

will appear as:

Exercise N. *Quantization of the Electromagnetic Field.*
In this exercise ....
...
N.1 *Classical Case.* First, here are ...
...
N.2 *Quantum Case.* Now we ...
...

> TIP   Leaving an extra (blank) newline between `\subexercise` and the sub-exercise text will produce the sub-exercise text on a new line.

> TIP   Of course, `\subexercise` is customizable, too. See section 7.2.

3.5 Note About Figures

note about figures ....? wrapfigure?

4 Solutions

4.1 Inline Solutions for Solutions Sheet: `\begin{loesung}...\end{loesung}`

You should write up the solutions for an exercise immedately after the exercise, or between exercise parts, using a `\begin{loesung}...\end{loesung}` environment. When the sheet is compiled in "exercise sheet" mode (the default), then the solutions are simply ignored

and not displayed. However, when the package option `sol` is provided, or if the command `\UebungMakeSolutionsSheet` has been called, then whenever the environment `\begin{loesung}...\end{loesung}` is encountered, a label "Solution" is printed, followed by the contents of the environment. By default, the solution text is printed in a smaller font to make it visually clear that it is the solution to the exercise.

Formatting of the solutions takes care, too, of numbering the equations differently (i.e. (S.1), (S.2), etc.) so equation numbering does not collide with the equation text. Equations are also guaranteed to have the same labels between the exercise and solution versions of the sheet.

The `\begin{loesung}...\end{loesung}` environment may appear anywhere in the exercise, and may be repeated. You may have, for example, one general solution at the end of the exercise, or multiple solutions after each exercise part or sub-exercise.

`\begin{loesung} ... \end{loesung}`
Provides solution text to an exercise. The content of this environment is by default hidden, unless in 'solution sheet' mode (package option `sol`, or with the command `\UebungMakeSolutionsSheet`). If in solution sheet mode, then the contents is formatted using a smaller font (by default) and is preceded by the label "Solution" (or "Lösung" if the sheet is in german, with the `deutsch` package option, see Sec.2.3).
Equations numbered within this environment obey a separate counter and their labels are preceded by a letter "S" (resp. "L" in German), i.e. (S.1), (S.2), ... (resp. (L.1), (L.2), ...), such that it is guaranteed that equation numbering stays consistent between solution sheet mode and exercise sheet mode.

`\begin{solution} ... \end{solution}`
Exactly the same as the `\begin{loesung}...\end{loesung}` environment.

! Both commands `\begin{loesung}...\end{loesung}` and `\begin{solution}...\end{solution}` display their label in the same language, which is the language of the exercise sheet. This defaults to English but may be set to German with the `deutsch` package option (Sec. 2.3).

`\UebungMakeSolutionsSheet` This command has exactly the same effect as providing the `sol` package option. It switches the sheet to "solutions" mode, giving it a "Solutions" title, and displaying all contents provided in `\begin{loesung}...\end{loesung}` environments and `\pdfsolution` commands.

4.2 PDF Attachment as solution

It is also possible to attach a PDF file with, for example, a scanned hand-written solution. The pages of that file are included at the end of the solutions sheet, with a reference to the page number at the point in the exercise where the solution is referenced, and a title superimposed to the included PDF pages that specify which exercise those pages refer to.

For example, if a solution is scanned as `scanned-solution.pdf`, then you can simply write in your exercise:

```
\exercise{A Nice Exercise}
Show that blah blah blah something cool.

\pdfsolution{scanned-solution.pdf}
```

the `\pdfsolution` command internally expands to a `\begin{solution}...\end{solution}` environment at the point where its called, inserting some text like "The solution is provided on page XYZ". Then the pages of the specified PDF are appended at the end of the solutions sheet, with on each page printed on top "Solution to exercise NN".

This works also as inline solutions to sub-exercises and to exercise parts inside an `\begin{exenumerate}...\end{exenumerate}` environment.

Obviously, the command expands to nothing if not in solutions mode, and no PDF pages are included in that case.

The inclusion of the PDF is internally accomplished with the `\includepdf` command from the `pdfpages`[3] package.

> `\pdfsolution [options]{pdf file}`   Specify a PDF file to include which contain the solution to the current exercise. A reference to the page where the solutions will be inserted (at the end of the sheet) is inserted at the current location within a `\begin{solution}...\end{solution}` environment. The included pdf pages are given a title on each page specifying which exercise they are the solution to. The `options` are any options that can be passed to `\includepdf` of the `pdfpages` package.

> `\pdfloesung [options]{pdf file}`   Exact same command as `\pdfsolution`.

5 Tips Sheet

A tips sheet, similarly to the solution sheet, can easily be generated.

....

---

[3] http://mirrors.ctan.org/macros/latex/contrib/pdfpages/pdfpages.pdf

> `\begin{tips} ... \end{tips}`
> > Some tips to be displayed only in tips sheet mode. Analogue of `\begin{loesung}...\end{loesung}` , but for tips instead of solutions.
> > ......

> `\UebungMakeTipsSheet` Analogue of `\UebungMakeSolutionsSheet` , turns this sheet into a tips sheet. ... .

..... also package option:

```
\usepackage[tips]{ethuebung} % Generates tips sheet
```

6 Exercise Sheet Style

This package provides different exercise sheet *styles*, i.e. ways the sheet look. The default style should usually be sufficient; however you may prefer the appearance provided by other styles.

> `\UebungStyle{...}` Sets the style of the exercise sheet to the given named style. This can be for example "`Default`", "`LargeSolFont`" or "`PreviousITP`".

The `Default` style changes nothing. It just provides the default style with all the labels and fonts and definitions as defined by the base package implementation.

The `LargeSolFont` style makes the exercise text appear italic in the solutions and keeps the solution text with a normal font size, instead of the smaller default font size.

The `PreviousITP` style redefines the appearance of the sheet to look like the `exercise.sty` style developed by Christoph Buchendorfer, with a larger title font, bold non italic exercise titles, exercise numbering including the sheet number, etc.

Check out section 7.5 for information on how to define custom styles.

7 Customizing the Exercise Sheet Appearance

In this section we will present some handy commands to change the way the exercise sheet looks, or to change some defaults to some other values you would prefer.

All `\Uebung***{...}` commands specified in this section internally expand to an internal macro definition, and may be called several times if need be (but it shouldn't need be...). Also, best practice is to call them in the preamble, but things will still work if you call them anywhere else before you call any command that actually uses the values you want to set.

7.1 Customizing the Header

`\UebungsblattTitleSeries {...}`   Redefines the title of the exercise sheet whenever the sheet is compiled in "exercise" sheet mode. This setting is ignored if the sheet is compiled in "solutions" sheet mode.
Default title is "Series" ("Übungsblatt" in German).

`\UebungsblattTitleSolutions {...}`   Redefines the title of the exercise sheet whenever the sheet is compiled in "solutions" mode. This setting is ignored if the sheet is compiled in "exercise sheet" mode.
Default title is "Solutions" ("Musterlösung" in German).

TIP   Both   commands   `\UebungsblattTitleSeries` and `\UebungsblattTitleSolutions` can be specified in the same preamble. The relevant title depending on exercise or solutions mode is automatically selected.

`\UebungsblattTitleFont {...}`   Redefines the commands to set the font for the main title. You may use the usual LaTeX comands to manipulate fonts, `\bfseries`, `\large`, `\Large`, `\fontfamily`, `\fontseries`, `\selectfont` etc. It is also possible to pass the name of a macro that expects an argument, e.g. `\underline`, if nothing else follows that macro.
The default font specification is "`\large\bfseries`".

`\UebungLogoFile {...}`   Specify a graphic file with a logo to include instead of the ETH logo. The file must be an acceptable file for `\includegraphics`, e.g. PDF or PNG for `pdf` output or EPS for `dvi` output.

`\UebungTitleCenterVSpacing {...}`   Specify some extra spacing that will lift the central title a bit higher vertically with respect to the logo and the lecturer/semester. Set something here if you have e.g. a long lecture name which starts overlapping with the logo.
By default, no spacing is added ("0mm").

7.2   Customizing the Exercise Labels and Fonts

\UebungHinweisFont {...}   Specify the font commands to use to set up the
    font for the main text produced by the \hint (p. 8) and \hints (p. 8) com-
    mands.
    This command has the same syntax as the \UebungsblattTitleFont (p. 14)
    command.
    Default font is "\small\itshape".

\UebungExTitleFont {...}   Specify the font used when displaying the title of
    an exercise, i.e. the text passed as argument to the \exercise (p. 5) com-
    mand.
    This command has the same syntax as the \UebungsblattTitleFont (p. 14)
    command.
    Default font is "\bfseries\itshape".

\UebungSubExTitleFont {...}   Specify the font used when displaying the title
    of a sub-exercise, i.e. the text passed as argument to the \subexercise (p. 9)
    command.
    This command has the same syntax as the \UebungsblattTitleFont (p. 14)
    command.
    Default font is "\bfseries\itshape".

\UebungLabel {...}   Specify the text to display to label an exercise. This is
    typically "Exercise" or "Question".
    Default value is "Exercise". See also \uebTheUebungLabel (p. 18).

\UebungSubLabel {...}   Specify the text to display to label a sub-exercise.
    The default value is empty. See also \uebTheUebungSubLabel (p. 18).

\UebungLabelEnum {...}   Specify   the   label   that   will   be   used
    for   each   exercise   part (e.g.   (a),   (b),   ...)   produced   by
    a \begin{exenumerate}...\end{exenumerate} (p. 6) environment.   Here
    you must specify the label with the format for the enumitem package,
    i.e. for example use any string containing one of the \roman*, \Roman*,
    \alph*, \Alph*, or \arabic* commands.
    The default label definition is "(\alph*)".

> `\UebungLabelEnumSub {...}` Specify the label that will be used for each nested exercise part, i.e. any `\begin{exenumerate}...\end{exenumerate}` (p. 6) environment nested within another `\begin{exenumerate}...\end{exenumerate}` (p. 6) environment. The default is (i), (ii), ... As for `\UebungLabelEnum`, the format has to be conform to the `enumitem` package.
> The default label definition is "`(\roman*)`".

> `\UebungHinweisLabel {...}` Specify what text to display to introduce a hint produced by `\hint` (p. 8). You may for example use a colon (':') instead of a period ('.') if you prefer.
> Default text is "Hint." ("Hinweis." in German).

> `\UebungHinweiseLabel {...}` Specify what text to display to introduce hints produced by `\hints` (p. 8). You may for example use a colon (':') instead of a period ('.') if you prefer.
> Default text is "Hints." ("Hinweise." in German).

> ⃠ Note that the same text will be displayed by the `\hint` (p. 8) and `\hinweis` (p. 9) commands regardless of the sheet language setting. That text is the one specified to `\UebungHinweisLabel`. The sheet language setting only changes the default value for the hint label. The same applies to the `\hints` (p. 8) and `\hinweise` (p. 9) commands.
> Actually, internally, when the the `deutsch` package option is given, a call to `\UebungHinweisLabel` is made to set the German version of the label, to replace the initial English version.

7.3   Customizing the Solutions Labels and Fonts

> `\UebungLoesungFont {...}` Specify the font to use for the inline solutions environment `\begin{loesung}...\end{loesung}` (p. 11). The font is a sequence of LaTeX font commands such as `\bfseries`, `\sfshape` etc.
> This command has the same syntax as `\UebungsblattTitleFont` (p. 14). However, here you may not specify a command that will take an argument such as `\underline`.

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`\UebungSolLabel{...}` Specify the text to display as a label for an inline solution block. This is the label that will be displayed as title of the \(sub)`paragraph` which is induced by a `\begin{loesung}`...`\end{loesung}` (p. 11) environment.
The default is "Solution." (or in German, "Lösung.").

`\UebungSolEquationLabel{...}` Specify a label that should be used to identify equations that are inside a solutions environment. This text is prepended to the equation number.
The default is "S." (or in German, "L.").

`\UebungAttachedSolutionTitleTop{...}` For pages with solutions included from an external PDF file with `\pdfloesung` (p. 12), you may specify here the spacing between the top of the page and the title which is automatically produced on those pages.
The default value is "`1.3\baselineskip`".

`\UebungAttachedSolutionTitleFont{...}` For pages with solutions included from an external PDF file with `\pdfloesung` (p. 12), specify here the font commands to use to display the title which is automatically produced on those pages.
The syntax is the same as `\UebungsblattTitleFont` (p. 14).
The default value is "`\bfseries\small\underline`".

`\UebungAttachedSolutionTitle{...}` For pages with solutions included from an external PDF file with `\pdfloesung` (p. 12), specify here the title to automatically display on each of those pages.
You may use the special `\uebattachedsolutiontheexercisenumber` command to refer to the exercise for which the current page is the solution.
The default value is "`Solution to Exercise~\uebattachedsolutiontheexercisenumber.`", or, if the sheet is in German, "`L\"osung zu der \"Ubung~\uebattachedsolutiontheexercisenumber.`".

> \UebungTextAttachedSolution {...}   For solutions included from an external
>   PDF file with \pdfloesung _(p. 12), use this command to specify which text
>   should be displayed at the point where \pdfloesung is called, to refer to
>   an attached solution.
>   You may use the special \uebthepageattached command to refer to the
>   page on which the solution is attached.
>   The default value is "`The solution to this exercise is attached
>   on page \uebthepageattached.`", or, if the sheet is in German,
>   "`Die L\"osung dieser \"Ubung finden Sie im Anhang auf der
>   Seite~\uebthepageattached.`".

7.4 Customizable "Composed" Commands

Some "compositions" can be redefined in order to change the sheet appearance. Use the proper LaTeX syntax for redefining commands, i.e.

```
\renewcommand{\uebSerieTitle}{Revision Sheet.}
```

> \theuebcounter   This command expands to the current exercise number, for-
>   matted in the way we want to display it in the sheet. It is a standard LaTeX
>   counter value like \thesection.
>   The default is simply "\arabic{uebcounter}".
>   You may redefine this command to display the exercise number as you wish.
>   For example, redefinition ....

> \uebTheUebungLabel   This command expands to the label that should be used
>   as a title for the \(sub)paragraph generated by \uebung _(p. 5). You may
>   redefine this command to some custom value, which will probably refer to
>   the current exercise number, \theuebcounter.
>   The default is
>   "\ueb@maybespaceafter{\ueb@TheUebungLabel}\theuebcounter.".

> \uebTheUebungSubLabel   Same as \uebTheUebungLabel, except that it is
>   used for sub-exercises (\subuebung/\subexercise _(p. 9)).
>   The relevant counter value is \thesubuebcounter, which should be defined
>   normally to also display the main exercise number.
>   The default is
>   "\ueb@maybespaceafter{\ueb@TheUebungSubLabel}\thesubuebcounter.".

```
\uebExerciseEqLabel        ...
```

```
\uebLoesungEqLabel         ...
```

```
\uebTipsEqLabel        ...
```

```
\uebHinweisParagraph        ...
```

```
\uebSerieTitle        ...
```

```
\uebHeaderLogo        ...
```

```
\uebHeaderCenter        ...
```

```
\uebHeaderRight        ...
```

```
\uebHeaderTopVSpace        ... -15mm
```

```
\uebHeaderMidVSpace        ... 2mm
```

```
\uebHeaderBelowVSpace        ... 2mm
```

```
\uebHeaderLogoWidth        ... .25\textwidth
```

```
\uebHeaderCenterWidth        ... .50\textwidth
```

```
\uebHeaderRightWidth        ... .2499\textwidth
```

```
\uebLoesungEndVSpace        ... 3mm
```

```
\uebTipsEndVSpace        ... 3mm
```

Some LaTeX Utilities. Some utilities are defined by this package, which you may use when you redefine commands presented above. All utilities are properly commented inside the source code itself, and only what I think are the two most useful utilities are presented here.

Note that to use these commands in a regular LaTeX file and not a style file, you should enclose your definitions between `\makeatletter` and `\makeatother`, since the command names contain the "`@`" character.

```
\ueb@maybespace {...}        Expands to the content of the argument preceeded by
        a nonbreaking space (~), except if the contents contains no text, in which
        case this macro expands to nothing.
```

```
\ueb@maybespaceafter {...}        Same as \ueb@maybespace, except that the
        space is inserted after the content if the content is not empty.
```

7.5 Defining Custom Styles

A 'style' is simply a collection of customization commands such as presented above, combined together in a LaTeX macro that is named `\uebstyle@<StyleName>`. If you also provide the command named `\uebstyle@<StyleName>@<Language>`, where `<Language>` is the language of the sheet (i.e. "English" or "Deutsch"), then it is called, too.

A (very simple) custom style could be defined as

```
\makeatletter
\newcommand{\uebstyle@DummyStyle}{%
  \UebungLabelEnum{\alph*)}%
  \UebungLabelEnumSub{\roman*)}%
  \UebungLoesungFont{}%
  \UebungExTitleFont{\bfseries}%
}
\newcommand{\uebstyle@DummyStyle@Deutsch}{%
  \UebungLabel{Aufgabe}%
}
\makeatother
```

This style could be set by calling the command

20

```
\UebungStyle{DummyStyle}
```

The exercise sheet would then have exercise parts numbered "a)", "b)", etc., the solutions font would be normal font and not a small font, and the exercise titles would be bold instead of bold italic. Also, if the sheet happened to be in German, then the exercise label would be "Aufgabe X." instead of "Übung X.".

> ⓘ If you define custom styles, *please* it would be nice to let me know, so that I can include them in future versions of `ethuebung`. Contact me at `pfaist@ethz.ch`.

7.6 Some Internals

The style sheet is thoroughly commented and should be pretty readable. It uses some LaTeX hacks, which I have tried to document properly.

Contact me if you need help deciphering the code, or if you have suggestions or comments. Just send me an e-mail at `pfaist@ethz.ch`.

8 Handy Scripts: `pdflatexex,` `pdflatexsol` and `pdflatextips`

… .

9 Commands Reference

`\UebungLecture`
    Sets the title of your lecture. See page 3.

`\UebungProf`
    Sets the name of the professor or lecturer of the course. See page 3.

`\UebungLecturer`
    Same as `\UebungProf` (p. 3). See page 3.

`\UebungSemester`
    Sets the course semester. See page 4.

`\UebungsblattNumber`
    Sets the current exercise sheet number. See page 4.

`\UebungsblattTitleSeries`
    Set the title for the exercise sheet (when not in solutions mode). See page 14.

`\UebungsblattTitleSolutions`
    Set the title for the solutions sheet (only when in solutions mode, i.e. with `[sol]` package option or with `\UebungMakeSolutionsSheet` (p. 11)). See page 14.

10 Package Options Reference

deutsch
  sol
  noenum
  nogeom