

The agopt_ex package^{*}

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Abstract

The agopt_ex package is an aid to generate exercise sheets for the Optimization Research Group, TU Kaiserslautern, or optionally the Mathematisches Institut der Universität Koblenz.

The agopt_ex package defines:

- environments for exercises and solutions,
- two layout variants (classic and modern, respectively, the latter containing a colored logo); includes a nice footer and predefined macros for a “in-class” and “take-home” sections,
- two locations (Kaiserslautern and Koblenz),
- various ways to decide whether or not the solutions should be included in the output, including an *auto-magic*[®] mechanism,
- a number of useful features and macros.

This package documentation shows how to use the package by describing all package options and (re)defined macros. The corresponding source code snippets are included at the appropriate place for easy customization (and, of course, for instructional reasons).

1 Package Loading

1.1 Package Options

Language Settings

german Define the language of the exercise sheet. The default is german. This option influences various textual elements of the exercise sheet.

english

```
1 \RequirePackage{etoolbox}
2 \RequirePackage{ifthen}
3 \newtoggle{german}
4 \toggletrue{german}
5 \DeclareOption{german}{\toggletrue{german}}
6 \DeclareOption{english}{\togglefalse{german}}
```

^{*}This document corresponds to agopt_ex v0.6, dated 2013/06/24. Obtain the newest version at <http://github.com/supermihi/latex>

Load Only the Environments

`bare` With the `bare` option, only the *exercise* and *solution* environments are loaded (and everything needed by those), but no fonts, desing or whatever else.

```
7 \newtoggle{bare}
8 \togglefalse{bare}
9 \DeclareOption{bare}{\toggletrue{bare}}
```

Toggle Solution Output

`solution` These options define whether or not solutions should be included in the output document or not. If neither
`nosolution` option is present, *auto-magic* detection is enabled.

With *auto-magic* detection, the solutions are output if and only if the jobname contains the string “olution” (in english mode) or “oesung” (in german mode). Note that this is not a typo; the first letter is omitted in order to be case insensitive. If you need a different detection string, redefine the `\solutionfilename` macro.

The jobname is normally the name of the source file without the `.tex` extension, but can be overridden in (pdf)latex, xelatex etc. with the `-jobname=NAME` option. This allows for a convenient workflow: Create a single `.tex` file, e.g. `exercise1.tex`, then run

- `xelatex exercise1`
- `xelatex -jobname=solution1 exercise1`

(substitute `xelatex` with your favourite \TeX engine, e.g. `pdflatex`, `latex`, ...) in order to generate `exercise1.pdf` (without solutions) and `solution1.pdf` (including solutions). The `compile_examples.py` script shows how to merge both steps into one command that can be used as compile command in your favourite \TeX editor.

```
10 \newtoggle{autoshowanswers}
11 \toggletrue{autoshowanswers}
12 \newtoggle{showanswers}
13
14 \DeclareOption{solution}{\toggletrue{showanswers}\togglefalse{autoshowanswers}}
15 \DeclareOption{nosolution}{\togglefalse{showanswers}\togglefalse{autoshowanswers}}
```

Choose Location

`kaiserslautern` Selects the location, where Kaiserslautern is the default.

`koblenz`

```
16 \newtoggle{koblenz}
17 \DeclareOption{koblenz}{\toggletrue{koblenz}}
18 \DeclareOption{kaiserslautern}{\togglefalse{koblenz}}
```

Choose Layout

`classic` Defines the style of the exercise sheet. `modern` uses a colored graphical logo of the AG in the title (as in
`modern` this document). `classic` resembles the classical exercise sheet style which hasn't changed for the past 30 years.

```
19 \newtoggle{modern}
20 \toggletrue{modern} % modern is the default style
```

```

21 \DeclareOption{modern}{\toggletrue{modern}}
22 \DeclareOption{classic}{\togglefalse{modern}}

```


This closes the options section.

```

23 \ProcessOptions\relax

```

1.2 Fonts

The package configures T_EX to use fonts of the Linux Libertine  family and the Euler math font. The implementation differs for (pdf)latex and xelatex. For this package to work with xelatex, you need to have the Linux Libertine and Linux Biolinum OpenType fonts installed.

```

24 \nottoggle{bare}{
25   \RequirePackage{iftex}
26   \ifPDFTeX
27     \RequirePackage[utf8]{inputenc}
28     \RequirePackage[T1]{fontenc}
29     \RequirePackage{libertine}
30     \RequirePackage{inconsolata}
31     \RequirePackage{eulervm}
32     \RequirePackage[\iftoggle{german}{ngerman}{american}]{babel}
33   \else % XeTeX or LuaTeX
34     \RequirePackage{amsfonts,amssymb}
35     \RequirePackage{eulervm}
36     \RequirePackage{fontspec}
37     \defaultfontfeatures{Ligatures=TeX}
38     \setromanfont[Numbers=Proportional]{Linux Libertine O}
39     \setsansfont[Numbers=Proportional]{Linux Biolinum O}
40     \setmonofont{Inconsolata}
41     \RequirePackage{polyglossia}
42     \iftoggle{german}{
43       \setmainlanguage[babelshorthands=true]{german}
44     }{
45       \setmainlanguage[variant=american]{english}
46     }
47   \fi
48   \usepackage{csquotes}
49 }{}

```

1.3 Required Packages

The following packages are needed by agopt_ex:

```

50 \nottoggle{bare}{
51   \RequirePackage{amsmath}
52   \RequirePackage{geometry}
53   \RequirePackage{hyperref}
54   \RequirePackage{fancyhdr}
55   \RequirePackage{zref-totpages}
56   \RequirePackage{url}
57 }{}

```

```
58 \RequirePackage{prettyref}
59 \RequirePackage{xspace}
```

2 Providing Lecture and Exercise Parameters

The following lecture and tutorial data should be set in every exercise sheet.

<code>\Lecture</code>	Specify the name of the lecture (e. g. “Praktische Mathematik: Lineare und Netzwerkoptimierung”). 60 <code>\def\Lecture#1{\def\lecture{#1}}</code>
<code>\LectureShort</code>	Specify a short name of the lecture, used in the footer (e. g. “PraMa Optimierung”). 61 <code>\def\LectureShort#1{\def\lectureshort{#1}}</code>
<code>\Sheetnumber</code>	Specify the exercise sheet number. 62 <code>\def\Sheetnumber#1{\def\sheetnumber{#1}}</code>
<code>\Deadline</code>	Specify the deadline for turn-in exercises. May include additional information such as “in the lecture” or “into the mailboxes in building 48”. 63 <code>\def\Deadline#1{\def\deadline{#1}}</code>
<code>\IssueDate</code>	Specify the date when the sheet was issued. 64 <code>\def\IssueDate#1{\def\issuedate{#1}}</code>
<code>\Lecturer</code>	Specify the name of the lecturer. 65 <code>\def\Lecturer#1{\def\lecturer{#1}}</code>
<code>\Operator</code>	Specify the name of the exercise operator. 66 <code>\def\Operator#1{\def\operator{#1}}</code>
<code>\Semester</code>	Specify the current semester or term (e. g. “winter term 2012”). 67 <code>\def\Semester#1{\def\semester{#1}}</code>
<code>\Homepage</code>	This optional parameter defines a homepage for the exercises. If it is used, the document output will contain a note where to download exercises. 68 <code>\def\Homepage#1{\def\homepage{#1}}</code>
<code>\InclassDate</code>	This optional parameter defines the date for in-class exercises. 69 <code>\def\InclassDate#1{\def\inclassdate{#1}}</code>

The parameters defined by the above macros can be accessed by their lowercase equivalents.

```
70 \def\lecture{Default lecture name}
71 \def\lectureshort{PraMa Optimierung}
72 \def\sheetnumber{1}
73 \def\deadline{}
74 \def\issuedate{06.12.1970}
75 \def\lecturer{Lecturer}
76 \def\operator{Exercise Operator}
77 \def\semester{Semester}
78 \def\homepage{}
```

2.1 Change Default Textual Elements

The words used for “Exercise”, “Sheet” etc. can be modified by redefining the following commands:

```
79 \iftoggle{german}{
80   \def\solutiontext{L\"osung}
81   \def\exercisetext{Aufgabe}
82   \newcommand{\exerciseshheettext}{Übungsblatt}
83   \def\withsolutiontext{mit L\"osung}
84   \def\pagetext{Seite}
85   \def\pointstext{Punkte}
86   \def\solutionsheettext{L\"osungsblatt}
87   \def\deadlinetext{Abgabe bis}
88   \def\solutionfilename{oesung}
89   \def\lecturetext{Vorlesung}
90   \newcommand{\exercisestext}{\"Ubungen}
91   \newcommand{\homepagetext}{Dieses \"Ubungsblatt sowie weitere %
92   Informationen zur \"Ubung sind unter \url{\homepage} erh\"altlich.}
93   \newcommand{\inclasstexttitle}{Pr\"asenz\"ubungen}
94   \newcommand{\inclasstext}{Zur Bearbeitung in der \"Ubung am \inclassdate}
95   \newcommand{\takehometexttitle}{Haus\"ubungen}
96   \newcommand{\takehometext}{Bitte bis \deadline{} abgeben.}
97   \newcommand{\deadlinepre}{\textbf{Abgabefrist: }}
98 }{
99   \def\solutiontext{Solution}
100   \def\exercisetext{Exercise}
101   \def\exerciseshheettext{Exercise Sheet}
102   \def\solutionsheettext{Solution Sheet}
103   \def\withsolutiontext{including solutions}
104   \def\pagetext{Page}
105   \def\pointstext{points}
106   \def\deadlinetext{Due date:}
107   \def\solutionfilename{olution}
108   \def\lecturetext{Lecture}
109   \def\exercisestext{Exercises}
110   \newcommand{\homepagetext}{Download of exercises at \url{\homepage}}
111   \newcommand{\inclasstexttitle}{In-Class Exercises}
112   \newcommand{\inclasstext}{To be done in the tutorial on \inclassdate}
113   \newcommand{\takehometexttitle}{Turn-In Exercises}
114   \newcommand{\takehometext}{Please hand in by \deadline{}}
115   \newcommand{\deadlinepre}{\textbf{Deadline: }}
116 }
```

For example, if you wish to name exercises “Problem” rather than “Exercise”, simply put

```
\renewcommand{\exercisetext}{Problem}
```

in your preamble.

3 Typesetting Exercises and Solutions

3.1 Exercises

`exercise` The exercise environment is used in the following way:

```
\begin{exercise} [<title>] {<points>}
```

```
...
```

```
\end{exercise}
```

The parameter *<points>* will be typeset in parenthesis after the exercise title, unless it is empty. If the optional *<title>* is given, the exercise title is typeset after the exercise number, separated by an endash (–). Exercises are numbered by a special counter (`exercise`); the number is displayed in the style *x.y* where *x* is the sheet number and *y* the exercise number on the sheet. You can thus use `\label` and `\ref` for exercise refercening as well as `\theexercise` to output the current exercise number.

As an example, the code

```
\begin{exercise}[$P \neq NP$]{4}
  Prove that  $P$  is a proper subset of  $NP$ .
\end{exercise}
```

will be output as

Exercise 1.1 – $P \neq NP$ (4 points)

Prove that P is a proper subset of NP .

```
117 \newcommand{\exheader}[1]{\par\vspace{2.5mm}\noindent{\bfseries #1}\par\vspace{1.5mm}}
118 \newcounter{exercise}
119 \setcounter{exercise}{0}
120 \newenvironment{exercise}[2][{}]{%
121 {%
122   \refstepcounter{exercise}
123   \exheader{\exercisetext{} \sheetnumber.\arabic{exercise}}
124   \ifthenelse{\equal{#1}{}}{\}{-- #1}
125   \ifthenelse{\equal{#2}{}}{\}{(#2 \pointstext)}}
126 }%
127 {\par\vspace{2mm}}
```

Subexercises can be typeset with usual `\enumerate` environments. In order not to mix up exercise and subexercise numbering, this package sets the first-order enumeration labelling to alphabetic numbering and the second order to arabic:

```
128 \RequirePackage{enumitem}
129 \setlist[enumerate,1]{label=\alph*}
130 \setlist[enumerate,2]{label=\arabic*}
```

3.2 Solutions

`solution` The solution environment can be used to create a sample solution. You can decide whether or not solutions will be included in the output, in order to distinguish between exercise and solution sheets (see Section 1.1).

The solution environment is used as follows:

```
\begin{solution} [⟨points⟩]
```

```
...
```

```
\end{solution}
```

The optional $\langle points \rangle$ parameter is typeset in the same way as the $\langle points \rangle$ argument of the $\langle solution \rangle$ environment. It may be used to denote the point split in case of subexercises.

For example, the code

```
\begin{solution}[2+2]
  Base clause: Let  $N=1$ , then obviously  $P=NP$ .
\end{solution}
```

will be output to (if solution output is active)

Solution 1.1 (2+2 points):

Base clause: Let $N = 1$, then obviously $P = NP$.

3.3 Implementation of the Auto-Magic Solution Feature

If neither `solution` nor `nosolution` is provided as package option, test if the `\jobname` contains the (language specific) word for “solution”. The test requires the `xstring` package.

```
131
132 \iftoggle{autoshowanswers}{
133   \RequirePackage{xstring}
134   \IfSubStr*{\jobname}{\solutionfilename}{
135     \toggletrue{showanswers}
136   }{
137     \togglefalse{showanswers}
138   }
139 }{}
140 \newenvironment{solution}[1][{}]{%
141 {%
142   \iftoggle{showanswers}{
143     \exheader{\solutiontext{} \sheetnumber.\arabic{exercise}}%
144     \ifthenelse{\equal{#1}{} }{ }{ (#1 \pointstext): }
145   }{
146     \par\vspace*{0pt}%
147     \setbox\z@\vbox\bgroup
148   }
149 }{%
150   \nottoggle{showanswers}{
151     \egroup
152   }{ }
153 }%
```

3.4 In-Class and Take-Home Exercises

`\inclass` These optional macros create a title that marks the begin of the “in-class” or “take-home” part, respectively,
`\takehome` of the exercise sheet.

```

154 % marks if an exercise type (inclass, takehome) was explicitly chosen, because otherwise the lay-
    out
155 % has to automatically print the deadline information.
156 \nottoggle{bare}{
157   \newtoggle{explicittype}
158   \newcommand{\inclass}{\par{\large
159     \iftoggle{modern}{\textsc{\inclasstexttitle}}{\MakeUppercase{\inclasstexttitle}}}\
160     (\inclasstext)\par
161     \toggletrue{explicittype}
162   }
163   \newcommand{\takehome}{\par{\large
164     \iftoggle{modern}{\textsc{\takehometexttitle}}{\MakeUppercase{\takehometexttitle}}}\
165     (\takehometext)\par
166     \toggletrue{explicittype}
167   }
168 }{}

```

4 Miscellaneous Features

4.1 PDF parameters

This package sets some PDF parameters according to the exercise sheet definition.

```

169 \nottoggle{bare}{
170   \hypersetup{
171     pdftitle={\lecture, \exercisheettext{ } \sheetnumber}, %
172     pdfauthor={\iftoggle{koblenz}{Mathematisches Institut, Universität Koblenz}{Optimization Re-
        search Group, TU Kaiserslautern}}, %
173     pdfcreator={\ifPDFTeX pdfTeX\else\ifLuaTeX LuaTeX\else XeLaTeX\fi\fi}
174   }
175 }{}

```

4.2 Referencing Exercises and Solutions

This package defines to reference formats for the prettyref package which can be used to reference exercises and solutions, respectively. Example:

Use the graph of `\prettyref{ex:dijkstra}` and ...

Would be typeset as, say,

Use the graph of Exercise 2 and ...

```

176 \newrefformat{ex}{\exercisetext~\ref{#1}}
177 \newrefformat{solution}{\solutiontext~\ref{#1}}

```

4.3 Headers and Footers

`agopt_ex` uses `fancyhdr` to set an empty header and a nice footer. You can modify the following default layout if you wish.

```

178 \nottoggle{bare}{
179   \pagestyle{fancy}

```



```

180 \fancyhead{}
181 \renewcommand{\headrulewidth}{0pt}
182 \renewcommand{\footrulewidth}{.4pt}
183 \cfoot{\iftoggle{showanswers}{\solutionsheettext}{\exerciseshheettext} \sheetnumber}
184 \rfoot{\pagetext{} \thepage/\ztotpages}
185 \lfoot{\lectureshort}
186 }{}

```

5 Implementation of the Layouts

The modern layout uses tikz to draw the logo.

```

187 \nottoggle{bare}{
188   \newcommand{\titledateline}{%
189     \ifthenelse{\equal{\deadline}{}}{%
190       {\inclasstext}%
191       {\deadlinetext{} \deadline{}}%
192   }
193   \iftoggle{modern}{
194     \RequirePackage{tikz}
195     \definecolor{tublau}{rgb}{0.125,0.34,0.68}
196     \renewcommand{\maketitle}{
197       \hrule\vspace{2mm}
198       \iftoggle{koblenz}{
199         \begin{minipage}{0.65\textwidth}
200         }{
201           \begin{minipage}{0.55\textwidth}
202         }
203         {\sffamily \lecture{}};\textbullet;\semester\
204         \LARGE \scshape \exerciseshheettext{} \sheetnumber %
205         \iftoggle{showanswers}{%
206           {\Large{} (\withsolutiontext)}%
207         }{}\\
208         \small \upshape \itshape \rmfamily \titledateline}
209       \end{minipage}
210       \iftoggle{koblenz}{
211         \begin{minipage}{0.34\textwidth}
212         }{
213           \begin{minipage}{0.44\textwidth}
214         }
215       \begin{flushright}
216       \iftoggle{koblenz}{
217         \definecolor{koblue}{RGB}{29,78,148}
218         \begin{tikzpicture}[y=-0.4pt, x=0.4pt]
219           \begin{scope}[cm={{1.25,0.0,0.0,-1.25,(0.0,57.5)}}]
220             \path[draw=koblue,line join=miter,line cap=butt,miter limit=3.86,line width=1.355pt] (52.2523,44.1371) -
- (36.2594,44.1371) -- (27.3711,20.7531) .. controls (25.6469,16.2371) and (23.7480,14.3812) .. (20.7582,14.3812) .. c
ontrols (18.3523,14.3812) and (17.2152,15.8039) .. (17.7930,18.0930) .. controls (17.9645,18.7738) and (18.4062,20.0102)
- (27.5484,44.1371) -- (11.6195,44.1371) -- (2.5723,20.3820) .. controls (2.1773,19.3305) and (1.8629,18.3402) .. (1.5
ontrols (0.3184,12.2160) and (0.9707,8.8754) .. (3.6957,6.2770) .. controls (6.7977,3.3695) and (11.6090,1.8234) .. (17.

```

```

trolls (24.0270,1.8234) and (29.2270,3.3695) .. (33.7609,6.6488) .. controls (38.4379,9.9894) and (40.2465,12.7730) ..
- (52.2523,44.1371) -- cycle;
221 \path[fill=koblue,nonzero rule] (9.7570,26.2781) -- (25.4219,26.2781) -
- (24.6152,23.8500) -- (8.9500,23.8500) -- (9.7570,26.2781) -- cycle(11.3711,31.1344) -
- (27.0359,31.1344) -- (26.2289,28.7066) -- (10.5641,28.7066) -- (11.3711,31.1344) -- cy-
cle(12.9848,35.9906) -- (28.6500,35.9906) -- (27.8430,33.5629) -- (12.1777,33.5629) --
(12.9848,35.9906) -- cycle(14.6207,40.9121) -- (30.2855,40.9121) -- (29.4570,38.4188) --
(13.7922,38.4188) -- (14.6207,40.9121);
222 \path[fill=koblue,nonzero rule] (34.1387,26.2781) -- (49.8039,26.2781) -
- (48.9969,23.8500) -- (33.3320,23.8500) -- (34.1387,26.2781) -- cycle(35.7531,31.1344) -
- (51.4180,31.1344) -- (50.6109,28.7066) -- (34.9457,28.7066) -- (35.7531,31.1344) -- cy-
cle(37.3668,35.9906) -- (53.0316,35.9906) -- (52.2250,33.5629) -- (36.5594,33.5629) --
(37.3668,35.9906) -- cycle(39.0023,40.9121) -- (54.6676,40.9121) -- (53.8391,38.4188) --
(38.1738,38.4188) -- (39.0023,40.9121);
223 \path[fill,nonzero rule] (71.3902,12.8836) -- (71.3902,20.6355) -- (69.3742,20.6355) --
(69.3742,2.5394) -- (71.3902,2.5394) -- (71.3902,10.3395) -- (71.8941,10.8434) -- (79.3102,2.5394) -
- (82.0941,2.5394) -- (73.3102,12.2117) -- (81.8055,20.6355) -- (79.0941,20.6355) -- (71.3902,12.8836);
224 \path[fill,even odd rule] (91.1125,20.9477) .. controls (85.9523,20.9477) and (81.6797,16.7477) .. (81.6797,11.6835)
trolls (81.6797,6.3555) and (85.9523,2.2277) .. (91.1125,2.2277) .. controls (96.2719,2.2277) and (100.5450,6.3555) ..
trolls (100.5450,16.7477) and (96.2719,20.9477) .. (91.1125,20.9477) -- cycle(91.1125,19.0754) .. con-
trolls (95.2641,19.0754) and (98.5281,15.6918) .. (98.5281,11.5879) .. controls (98.5281,7.5078) and (95.2164,4.0996)
trolls (87.0078,4.0996) and (83.6957,7.5078) .. (83.6957,11.5879) .. controls (83.6957,15.6918) and (86.9602,19.0754)
225 \path[fill,even odd rule] (105.2860,10.9398) -- (107.0380,10.9398) .. con-
trolls (109.2460,10.9398) and (111.9340,10.5312) .. (111.9340,7.7238) .. controls (111.9340,4.9637) and (109.5580,4.4117)
- (105.2860,4.4117) -- (105.2860,10.9398) -- cycle(103.2700,2.5395) -- (107.4700,2.5395) .. con-
trolls (111.0460,2.5395) and (113.9500,3.9797) .. (113.9500,7.5801) .. controls (113.9500,9.7398) and (112.6780,11.6835)
trolls (111.7420,13.0273) and (112.2930,14.2758) .. (112.2930,15.7398) .. controls (112.2930,19.4355) and (109.5340,20.6355)
- (103.2700,20.6355) -- (103.2700,2.5394) -- cycle(105.2860,18.7637) -- (106.0780,18.7637) .. con-
trolls (108.5500,18.7637) and (110.2780,18.4758) .. (110.2780,15.7398) .. controls (110.2780,12.9316) and (108.3340,12.2383)
- (105.2860,12.6676) -- (105.2860,18.7637);
226 \path[fill,nonzero rule] (118.9120,20.6355) -- (116.8960,20.6355) -- (116.8960,2.5394) -
- (123.9040,2.5394) -- (123.9040,4.4117) -- (118.9120,4.4117) -- (118.9120,20.6355);
227 \path[fill,nonzero rule] (125.8960,2.5394) -- (135.2800,2.5394) -- (135.2800,4.4117) -
- (127.9120,4.4117) -- (127.9120,11.5156) -- (135.0640,11.5156) -- (135.0640,13.3875) -
- (127.9120,13.3875) -- (127.9120,18.7637) -- (135.2800,18.7637) -- (135.2800,20.6355) --
(125.8960,20.6355) -- (125.8960,2.5394);
228 \path[fill,nonzero rule] (138.8260,2.5394) -- (140.8420,2.5394) -- (140.8420,16.4836) -
- (154.9540,1.7238) -- (154.9540,20.6355) -- (152.9380,20.6355) -- (152.9380,6.6195) --
(138.8260,21.4035) -- (138.8260,2.5395);
229 \path[fill,nonzero rule] (160.5690,4.4117) -- (170.4570,20.6355) -- (158.4800,20.6355) -
- (158.4800,18.7637) -- (167.0970,18.7637) -- (157.2330,2.5394) -- (170.1930,2.5394) --
(170.1930,4.4117) -- (160.5690,4.4117);
230 \path[fill,nonzero rule] (179.4550,12.8383) .. controls (178.7110,12.8383) and (178.1110,12.2383) .. (178.1110,10.7746)
trolls (178.1110,10.7746) and (178.7110,10.1504) .. (179.4550,10.1504) .. controls (180.1980,10.1504) and (180.7990,10.7746)
trolls (180.7990,12.2383) and (180.1980,12.8383) .. (179.4550,12.8383);
231 \path[fill,nonzero rule] (191.7840,20.6355) -- (189.7680,20.6355) -- (189.7680,2.5394) -
- (196.7760,2.5394) -- (196.7760,4.4117) -- (191.7840,4.4117) -- (191.7840,20.6355);
232 \path[fill,even odd rule] (209.6880,7.6758) -- (211.8240,2.5394) -- (214.0550,2.5394) -
- (205.9200,21.4996) -- (197.5670,2.5394) -- (199.7760,2.5394) -- (201.9590,7.6758) --
(209.6880,7.6758) -- cycle(208.8950,9.5480) -- (202.7760,9.5480) -- (205.8710,16.7957) --

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(208.8950,9.5480);
233 \path[fill,nonzero rule] (216.1410,2.5394) -- (218.1570,2.5394) -- (218.1570,16.4836) -
- (232.2700,1.7238) -- (232.2700,20.6355) -- (230.2540,20.6355) -- (230.2540,6.6195) --
(216.1410,21.4035) -- (216.1410,2.5395);
234 \path[fill,even odd rule] (236.0370,2.5394) -- (239.3960,2.5394) .. con-
trols (242.2290,2.5394) and (244.3880,2.8996) .. (246.5490,4.8195) .. controls (248.5410,6.5957) and (249.5000,8.9238)
trols (249.5000,14.2520) and (248.5640,16.6758) .. (246.5000,18.4516) .. controls (244.3640,20.2758) and (242.1560,20.6355)
- (236.0370,20.6355) -- (236.0370,2.5394) -- cycle(238.0530,4.4117) -- (238.0530,18.7637) --
(239.5160,18.7637) .. controls (241.6520,18.7637) and (243.4770,18.4758) .. (245.1320,17.0117) .. con-
trols (246.6920,15.6438) and (247.4840,13.6516) .. (247.4840,11.5879) .. controls (247.4840,9.5719) and (246.7160,7.6195)
trols (243.5720,4.7238) and (241.7250,4.4117) .. (239.5160,4.4117) -- (238.0530,4.4117);
235 \path[fill,even odd rule] (262.2620,7.6758) -- (264.3980,2.5394) -- (266.6290,2.5394) -
- (258.4940,21.4996) -- (250.1410,2.5394) -- (252.3500,2.5394) -- (254.5340,7.6758) --
(262.2620,7.6758) -- cycle(261.4700,9.5480) -- (255.3500,9.5480) -- (258.4460,16.7957) --
(261.4700,9.5480);
236 \path[fill,nonzero rule] (269.8440,20.6355) -- (267.8280,20.6355) --
(267.8280,9.3074) .. controls (267.8280,7.2438) and (268.0200,5.5879) .. (269.6040,4.0754) .. con-
trols (270.8280,2.8758) and (272.5800,2.2277) .. (274.2840,2.2277) .. controls (276.1080,2.2277) and (277.9080,2.9477)
trols (280.5960,5.7797) and (280.7390,7.3395) .. (280.7390,9.3074) -- (280.7390,20.6355) --
(278.7230,20.6355) -- (278.7230,9.8594) .. controls (278.7230,8.4437) and (278.7960,6.8594) .. (277.8360,5.7078) .. co-
trols (276.9960,4.6996) and (275.5800,4.0996) .. (274.2840,4.0996) .. controls (272.9630,4.0996) and (271.4280,4.7238)
trols (269.7960,6.9797) and (269.8440,8.5156) .. (269.8440,9.8594) -- (269.8440,20.6355);
237 \path[fill,nonzero rule] (71.3422,44.6355) -- (69.3262,44.6355) -- (69.3262,33.3074) .. con-
trols (69.3262,31.2438) and (69.5180,29.5879) .. (71.1020,28.0754) .. controls (72.3262,26.8758) and (74.0781,26.2277)
trols (77.6059,26.2277) and (79.4062,26.9477) .. (80.6543,28.2914) .. controls (82.0941,29.7797) and (82.2383,31.3395)
- (82.2383,44.6355) -- (80.2223,44.6355) -- (80.2223,33.8594) .. controls (80.2223,32.4438) and (80.2945,30.8594) .. co-
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238 \path[fill,nonzero rule] (93.4863,26.5395) -- (95.5023,26.5395) -- (95.5023,40.4836) -
- (109.6140,25.7238) -- (109.6140,44.6355) -- (107.5980,44.6355) -- (107.5980,30.6195) --
(93.4863,45.4035) -- (93.4863,26.5395);
239 \path[fill,nonzero rule] (120.9890,26.5395) -- (123.0054,26.5395) --
(123.0054,44.6356) -- (120.9890,44.6356) -- (120.9890,26.5395) -- cycle;
240 \path[fill,nonzero rule] (134.7300,44.6355) -- (132.5460,44.6355) --
(139.8900,25.4598) -- (147.2340,44.6355) -- (145.0500,44.6355) -- (139.8900,30.8355) --
(134.7300,44.6355);
241 \path[fill,nonzero rule] (156.7520,26.5395) -- (166.1360,26.5395) -
- (166.1360,28.4117) -- (158.7690,28.4117) -- (158.7690,35.5156) -- (165.9200,35.5156) -
- (165.9200,37.3875) -- (158.7690,37.3875) -- (158.7690,42.7637) -- (166.1360,42.7637) --
(166.1360,44.6355) -- (156.7520,44.6355) -- (156.7520,26.5395);
242 \path[fill,even odd rule] (179.1380,42.7637) -- (179.7380,42.7637) .. con-
trols (182.1620,42.7637) and (184.3460,42.4758) .. (184.3460,39.4996) .. controls (184.3460,36.6918) and (182.0430,36.2598)
- (179.1380,36.2598) -- (179.1380,42.7637) -- cycle(179.1380,34.4836) -- (179.6420,34.4836) --
(185.1140,26.5395) -- (187.5860,26.5395) -- (181.8260,34.6516) .. controls (184.6100,34.8918) and (186.3620,36.8594)
trols (186.3620,43.7238) and (183.1700,44.6355) .. (179.7380,44.6355) -- (177.1220,44.6355) -
- (177.1220,26.5395) -- (179.1380,26.5395) -- (179.1380,34.4836);
243 \path[fill,nonzero rule] (207.5020,42.1395) .. controls (206.5420,43.9156) and (204.8380,44.9477) .. (202.8220,44.9477)
trols (200.1340,44.9477) and (197.7580,43.1477) .. (197.7580,40.3395) .. controls (197.7580,37.7477) and (199.5820,36.2598)
- (202.7980,35.2277) .. controls (204.4780,34.4598) and (206.1340,33.7398) .. (206.1340,31.6277) .. con-
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- (196.8220,30.9078) .. controls (197.3980,28.1000) and (199.5580,26.2277) .. (202.4620,26.2277) .. con-
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- (202.6060,37.4355) .. controls (201.3820,37.9879) and (199.7740,38.7078) .. (199.7740,40.2680) .. con-
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- (207.5020,42.1395);
244 \path[fill,nonzero rule] (218.7000,26.5395) -- (220.7160,26.5395) --
(220.7160,44.6356) -- (218.7000,44.6356) -- (218.7000,26.5395) -- cycle;
245 \path[fill,nonzero rule] (236.7370,42.7637) -- (241.1530,42.7637) --
(241.1530,44.6355) -- (230.3520,44.6355) -- (230.3520,42.7637) -- (234.7210,42.7637) --
(234.7210,26.5395) -- (236.7370,26.5395) -- (236.7370,42.7637);
246 \path[fill,even odd rule] (259.2930,31.6758) -- (261.4300,26.5395) -
- (263.6610,26.5395) -- (255.5250,45.4996) -- (247.1730,26.5395) -- (249.3810,26.5395) --
(251.5660,31.6758) -- (259.2930,31.6758) -- cycle(258.5010,33.5480) -- (252.3810,33.5480) -
- (255.4770,40.7957) -- (258.5010,33.5480);
247 \path[fill,nonzero rule] (276.0670,42.7637) -- (280.4840,42.7637) --
(280.4840,44.6355) -- (269.6840,44.6355) -- (269.6840,42.7637) -- (274.0520,42.7637) --
(274.0520,26.5395) -- (276.0670,26.5395) -- (276.0670,42.7637);
248 \path[fill,nonzero rule] (250.6180,44.7105) .. controls (249.8740,44.7105) and (249.2740,44.1105) .. (249.2740
trols (249.2740,42.6465) and (249.8740,42.0227) .. (250.6180,42.0227) .. controls (251.3620,42.0227) and (251.9620,42
trols (251.9620,44.1105) and (251.3620,44.7105) .. (250.6180,44.7105);
249 \path[fill,nonzero rule] (260.4040,44.7105) .. controls (259.6600,44.7105) and (259.0590,44.1105) .. (259.0590
trols (259.0590,42.6465) and (259.6600,42.0227) .. (260.4040,42.0227) .. controls (261.1480,42.0227) and (261.7480,42
trols (261.7480,44.1105) and (261.1480,44.7105) .. (260.4040,44.7105);
250 \end{scope}
251 \end{tikzpicture}
252 }{
253 \begin{tikzpicture}[klumpen/.style={minimum size=4mm,rectangle},
254 every edge/.append style={very thick},scale=.9]
255 \node[fill=red,klumpen] (k1) at (0,0) {};
256 \node[fill=tublau,klumpen] (k2) at (2,0) {} edge (k1);
257 \node[fill=tublau,klumpen] (k3) at (2,-1) {} edge(k2);
258 \node[fill=red,klumpen] (k4) at (5,-1) {} edge(k3);
259 \node[font={\sffamily\bfseries\fontsize{15}{16}\selectfont}] at (1,-.5) {OPT};
260 \node[font={\sffamily\fontsize{8}{7}\selectfont},anchor=west] at (2.3,-.5)
261 {\begin{minipage}{2.6cm}Optimization\Research Group\end{minipage}};
262 \end{tikzpicture}
263 }
264 \end{flushright}
265 \end{minipage}\vspace{2mm}\hrule
266 \begin{center}\small
267 \textbf{\lecturetext:} \lecturer\\
268 \textbf{\exercisestext:} \operator
269 \end{center}\vspace{-2mm}
270 \ifthenelse{\equal{\homepage}{}}{}{
271 {\small \homepagetext}
272 }
273 }
274
This is the implementation of the classic layout.
275 }{

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276 \renewcommand{\maketitle}{
277   \begin{minipage}{0.49\textwidth}
278     \begin{flushleft}
279       \iftoggle{koblenz}{
280         Universität Koblenz-Landau, Campus Koblenz\\
281         Mathematisches Institut\\
282       }{
283         Technische Universität Kaiserslautern\\
284         Fachbereich Mathematik\\
285       }
286       \issuedate
287     \end{flushleft}
288   \end{minipage}
289   \begin{minipage}{0.49\textwidth}
290     \begin{flushright}
291       \lecturer\\
292       \operatorator\\
293       \semester
294     \end{flushright}
295   \end{minipage}
296
297   \begin{center}
298     {\Large \bfseries \lecture}\\[0.6cm]
299     {\Large \bfseries %
300     \iftoggle{showanswers}{%
301       \solutionsheettext}{%
302     }{%
303       \exercisheettext}{%
304     } \sheetnumber}\\[1cm]
305   \end{center}
306 }
307 % URL at end of document
308 \AtEndDocument{%
309   \nottoggle{explicittype}{
310     \par
311     \deadlinepre\takehometext
312   }{}
313   \ifthenelse{\equal{\homepage}{}}{}{
314     \begin{center}
315       \vfill{\small \homepagetext}
316     \end{center}
317   }
318 }
319 }
320 }{}

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Change History

v0.1	umentation	1
General: Initial version	v0.4	
v0.2	General: add Koblenz mode	1
General: Largely rewritten	v0.4.1	
v0.2.1	General: optional points arg for solution environ-	
General: Add font definitions	ment	1
v0.2.2	v0.5	
General: Improve on AG logo	General: implement optional bare mode which	
v0.3	loads only the environments	1
General: A first complete proof-read, again lots of	v0.5.1	
small changes	General: use TikZ version of the Koblenz logo . . .	1
v0.3.1	v0.6	
General: Fixed modern layout, added URL to doc-	General: use etoolbox instead of newif	1

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