

The schl package^{*}

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Abstract

schl is a \LaTeX package that provides commands and environments suitable for document types that appear in a classroom environment. It's development is based on the Greek school system, but it may be useful in other contexts as well.

1 Introduction

Worksheets and tests are common document types in a classroom. schl package comes with macros that facilitate the creation of these documents. It has list environments for questions, exercises and tasks. Other environments of the package can be used for tickable or multiple choice answers. There are also commands for typesetting solutions, hints and answers to exercises.

Furthermore, you can set the name of the teacher, subject, grade, headmaster, school, date, school year and use these to print school's logo or information about an exam. schl has commands to typeset headers for each document type, a macro for typing the points of an exercise and two commands for blank space. There is also a macro for typesetting a wish for good luck!

schl is based on the Greek school practice. It redefines in Greek the common math macros \sin , \cos , \tan , \cot and \gcd . Also, it provides the math operator lcm for the least common multiple of integers. Another characteristic of Greek school mathematics, is that \lim operator appears in display mode. schl offers a macro for this.

By default, schl prints all macros in Greek but this can be changed to any other language. This can be done by redefining package's internal macros.

schl loads the packages fontspec, enumitem, mdframed and amsmath. It is written for \LaTeX , but can be used by any system that supports fontspec.

^{*}This document corresponds to schl v0.1, dated 2019/06/15.

2 Macros

2.1 Mathematics

`\sin` These macros redefine in Greek the corresponding trigonometric operators `\sin`, `\cos`, `\tan`
`\cos` and `\cot`.
`\tan` `\gcd` and `\lcm` provide the arithmetic operators for greatest common divisor and
`\cot` least common multiple in Greek.
`\gcd` Command `\limdisplay {⟨text⟩}` prints `⟨text⟩` under `\lim`
`\lcm` `\newcommand{\limdisplay}[1]{\displaystyle\lim_{#1}}`
`\limdisplay`

2.2 Blank space

`\lowerdots` Usually, we need to designate blank space in a document. `schl` package has two
`\blankspace` commands for this. The first one `\lowerdots [⟨length⟩]{⟨number⟩}`, prints `⟨number⟩`
dotted. Optional argument `⟨length⟩` sets the deviation from base line. It's default value is
`-0.3ex`.

```

2 \newcommand\lowerdots[2][-0.3ex]{%
3   \begingroup
4   \lccode`m=`.\relax
5   \raisebox{#1}{\lowercase\expandafter{\romannumeral\number\number#2 000}}%
6   \endgroup
7 }
```

`\blankspace [⟨length⟩]{⟨linelength⟩}` prints a line with length `⟨linelength⟩`. The
optional argument is the deviation from the base line and it's default value is `-0.3ex`.
`\schl@rulethickness` is the default thickness for all `\blankspace` lines.

```

8 \newcommand\blankspace[2][-0.3ex]{%
9   \raisebox{#1}{\rule{#2}{\schl@rulethickness}}
10 }
```

2.3 Lists

`schl` package defines six types of lists. These are question, exercise, `schltask`,
`multichoice`, `tickchoice` and `truefalse`. `tickchoice` comes also with a starred
version `tickchoice*`. All of them depend on the package `enumitem`.
`question` These environments are enumerate-like lists. List's `\item` is of the form `⟨type⟩`
`exercise` `⟨counter⟩`, where type is `\question@term` for question, `\exercise@term` for exercise
`schltask` and `\task@term` for `schltask`. `⟨counter⟩` is the internal counter of the environment.

```

11 \newlist{question}{enumerate}{1}
12 \setlist*[question]{%
13   align=left,
14   label=\normalsize\bf \question@term\ \arabic*.,
15   wide,
16   leftmargin=0pt,
17   labelindent=0pt
18 }
```

```

19 \newlist{exercise}{enumerate}{1}
20 \setlist*[exercise]{%
21   align=left,
22   label=\normalsize\bf\exercise@term\ \arabic*.,
23   wide,
24   leftmargin=0pt,
25   labelindent=0pt
26 }

27 \newlist{schltask}{enumerate}{1}
28 \setlist*[schltask]{%
29   align=left,
30   label=\normalsize\bf\letterspace{\defaultletterspace}\task@term\ \Alph*,
31   wide,
32   leftmargin=0pt,
33   labelindent=0pt
34 }

\letterspace    The macro \letterspace{<number>} is used to set the horizontal space of adjacent
                characters in a word. It is based on the \addfontfeature macro from the package
                fontspec. The argument <number> is a percentage of the font size.
                35 \def\letterspace#1{\addfontfeature{LetterSpace=#1}}

multichoice    The multichoice environment is used to typeset multiple choice answers.
                36 \newlist{multichoice}{enumerate*}{1}
                37 \setlist*[multichoice]{
                38   labelindent=\parindent,
                39   label=\Alph*.,
                40   itemjoin=\hspace{\fill},
                41   before=\hspace{\fill},
                42   after=\hspace{\fill}
                43 }

tickchoice    The environments tickchoice and tickchoice* are variants of the itemize list.
tickchoice*    For both cases, each item is preceded by a square. tickchoice stacks items vertically,
                44 \newlist{tickchoice}{itemize}{1}
                45 \setlist[tickchoice]{labelindent=\parindent,label={\large$\square$}}
                while tickchoice* stacks them horizontally.
                46 \newlist{tickchoice*}{itemize*}{1}
                47 \setlist*[tickchoice*]{
                48   labelindent=\parindent,
                49   label={\large$\square$},
                50   itemjoin=\hspace{\fill},
                51   before=\hspace{\fill},
                52   after=\hspace{\fill}
                53 }

truefalse    truefalse is a variant of the enumerate environment. Each \item is divided in two
                parts. The first part is the text that follows the \item macro. The second part is a
                \parbox that prints \trueabbr@term and \falseabbr@term.
                54 \newlist{truefalse}{enumerate}{1}

```

```

55 \setlist[truefalse]{label={\bf \arabic*},%
56   before*=%
57   \let\defaultitem\item%      Save the standard definition of \item in a macro.
58   \toggletrue{first}%        Set the first toggle with initial value true.
59   \def\item{%
60     \iftoggle{first}{%
61       \togglefalse{first}%    Set the first toggle to take the value false.
62       \defaultitem\begin{minipage}[t]{0.8\linewidth minus \truefalselength}%
63     }{%
64       \end{minipage}\hfill\truefalselabel\defaultitem%
65       \begin{minipage}[t]{0.8\linewidth minus \truefalselength}%
66     }
67   }% new, temporary definition of \item
68 },
69 after*=% This takes care of adding the fill for the final item on
70 %       the list and just makes sure that \item is reset to its standard definition
71 \end{minipage}\hfill\truefalselabel% fill for final item in list
72 \let\item\defaultitem% restore standard definition of \item
73 }%
74 }

```

matchingque The macro `\matchingque{<CSV>}{<CSV>}` is used to typeset matching questions. `<CSV>` are comma separated values. The `<CSV>`s of the first argument are the parts of the matching questions that will be print in the left column. Similarly, the `<CSV>` of the second argument are going to be printed on the right column of the matching questions.

```

75 \newcommand\matchingque[3][300pt]{%
76   \begin{center}
77     \parbox[c]{#1}{
78       \parbox[c]{\leftmatchwidth}{%
79         \begin{leftmatching}
80           \@for\tmp:=#2%
81           \do{%
82             \item \tmp
83           }
84         \end{leftmatching}
85       }\hfill%
86       \parbox[c]{\rightmatchwidth}{%
87         \begin{rightmatching}
88           \@for\tmp:=#3%
89           \do{%
90             \item \tmp
91           }
92         \end{rightmatching}
93       }
94     }
95   \end{center}
96 }

```

leftmatching Environments `leftmatching` and `rightmatching` are used to typeset each column
rightmatching in `\matchingque`.

```

97 \newlist{leftmatching}{enumerate}{1}
98 \newlist{rightmatching}{enumerate}{1}
99 \setlist*{leftmatching}{label=\bf\Alph*}
100 \setlist*{rightmatching}{label=\bf\arabic*}

```

2.4 Answers, solutions and hints

\answer Macro `\answer{<text>}` prints (`\answerabbr@term \meta{text}`) at the right end of the current line.

```

101 \newcommand\answer[1]{%
102   \hfill{\footnotesize (\answerabbr@term: #1)}
103 }

```

\solution Macro `\solution{<text>}` is used to typeset the solution of an exercise.

```

104 \newcommand\solution[1]{%
105   \par\noindent\phantom{.}\hfill\textbf{\solution@term}\hfill\phantom{.}\par%
106   \noindent #1
107 }

```

\hint `schl` provides the macro `\hint{<text>}` for typesetting exercise hints.

```

108 \newcommand\hint[1]{%
109   \par{\scriptsize\noindent\textbf{\hint@term:} #1}%
110 }

```

\deadline A feature of homework assignments is a deadline date. `\deadline{<date>}` prints `\deadline@term` followed by argument `<date>`.

```

111 \newcommand\deadline[1]{%
112   \noindent{\bf\normalsize\deadline@term:} #1}
113 }

```

2.5 Titles and headers

\heading Common document types in a school environment are the worksheet, various tests and final written exams. The macro `\heading{<text>}` gives a generic header for all these documents.

```

114 \newcommand\heading[1]{%
115   \begin{center}
116     {\bf\large #1}
117   \end{center}
118 }

```

\worksheettitle Macro `\worksheettitle{<text>}` sets the title of a worksheet. It appends `<text>` to `\worksheet@term`.

```

119 \newcommand\worksheettitle[1]{%
120   \heading{\worksheet@term\ #1}
121 }

```

\examtitle `\examtitle[<text>]{<text>}` is used to set the title of tests. the optional argument has the default value `\termtest@term`.

```

122 \newcommand\examtitle[2][\termtest@term]{%

```

```

123 \heading{#1 #2}
124 }

\finalexamheader    Titles for end year exams have a standardized form in Greek schools. \exams@term
                    is followed by information about the exam, then comes \period@term with the exam
                    period after it. \finalexamheader{<info>}{<period>} is used for these cases.
125 \newcommand\finalexamheader[2]{%
126   \heading{\letterspace{\defaultletterspace} #1 \exams@term\ [0.5ex] \period@term\ #2}
127 }

\schl@framedbox    \schl@framedbox{<text>} prints <text> in a centered frame box. It is used by
                  \theorypart and \exercisepart.
128 \newcommand\schl@framedbox[1]{%
129   \begin{center}
130     \fbox{\large{\bf\letterspace{\defaultletterspace} #1} }%
131   \end{center}
132 }

\theorypart        Sometimes theory and exercise sections constitute a written test. Macros \theorypart
\exercisepart      and \exercisepart print headers for those parts.
133 \newcommand\theorypart{%
134   \schl@framedbox{\theoryheader@term\!}
135 }

and

136 \newcommand\exercisepart{%
137   \schl@framedbox{\exerciseheader@term\!}
138 }

```

2.6 School information

```

\school            The macros \school{<text>}, \headmaster{<name>}, \teacher{<name>}, \subject{<text>},
\headmaster        \grade{<text>}, \schoolyear{<year>}, \schldate{<date>} and \examtime{<time>}
\teacher           define and set the value of internal macros.
\subject
\grade
\schoolyear
\schldate
\examtime
139 \newcommand\school[1]{\def\schl@school{#1}}
140 \newcommand\headmaster[1]{\def\schl@headmaster{#1}}
141 \newcommand\teacher[1]{\def\schl@teacher{#1}}
142 \newcommand\subject[1]{\def\schl@subject{#1}}
143 \newcommand\grade[1]{\def\schl@grade{#1}}
144 \newcommand\schoolyear[1]{\def\schl@schoolyear{#1}}
145 \newcommand\schldate[1]{\def\schl@schldate{#1}}
146 \newcommand\examtime[1]{\def\schl@examtime{#1}}

\authorityi        In a similar vein, \authorityi{<text>}, \authorityii{<text>} and \authorityiii{<text>}
\authorityii       define the internal macros \schl@authorityi, \schl@authorityii and \schl@authorityiii.
\authorityiii
147 \newcommand\authorityi[1]{\def\schl@authorityi{#1}}
148 \newcommand\authorityii[1]{\def\schl@authorityii{#1}}
149 \newcommand\authorityiii[1]{\def\schl@authorityiii{#1}}

```

2.7 Other macros for tests

`\points` `\points[$\langle macro \rangle$]{ $\langle number \rangle$ }` is used to designate the points of an exercise. `{ $\langle number \rangle$ }` is the number of points for the current exercise, while `[$\langle macro \rangle$]` can be used to control the space just before the points.

```

150 \newcommand{\points}[2][\hfill]{%
151 #1(\textbf{\footnotesize \points@term{#2}\ #2})
152 }

```

`\fullname` `\fullname{ $\langle text \rangle$ }` prints `\fullname@term` followed by $\langle text \rangle$.

```

153 \newcommand\fullname[1]{%
154 \noindent{\normalsize\fullname@term :} #1
155 }

```

`\datefield` Similarly, `\datefield{ $\langle text \rangle$ }` prints `\date@term` with $\langle text \rangle$ after it.

```

156 \newcommand\datefield[1][0]{%
157 \noindent{\normalsize\date@term :}
158 }

```

`\schoollogo` `\schoollogo{ $\langle width \rangle$ }` prints `\schl@school`, `\schl@grade`, `\schl@subject` and `\schl@teacher`. $\langle width \rangle$ is the length of the `\parbox`.

```

159 \def\schoollogo#1{%
160 \parbox[t]{#1}{%
161 \schl@school\\%
162 \schl@grade\\%
163 \schl@subject\\%
164 \schl@teacher
165 }
166 }

```

`\authoritylogo` `\authoritylogo[$\langle number \rangle$]` prints `\sch@authorityi`, `\sch@authorityii`, `\sch@authorityiii` and `\schl@school`. Argument $\langle number \rangle$ is a multiplier for `\baselineskip`. This spaces is added above macro.

```

167 \newcommand\authoritylogo[1][1.5]{%
168 \noindent\parbox[t][\height]{0.4\textwidth}{%
169 \centering%
170
171 \vspace{#1\baselineskip}
172
173 {\schl@authorityi}
174
175 \vspace{3\lineskip}
176
177 {\footnotesize\schl@authorityii}
178
179 \vspace{2\lineskip}
180
181 {\footnotesize\schl@authorityiii}
182
183 \vspace{3\lineskip}
184

```

```

185     {\small\letterspace{\defaultletterspace}\MakeUppercase{\schl@school}}
186   }
187 }

\examdetails Written exam documents contain information about the period of the exam, subject,
\examdetailsii grade, writer of the test, supervisors of the exam and date. schl package has the macros
\examdetails{\text} and \examdetailsii for printing this information. Argument
\text of \examdetails is the exam period.

188 \newcommand\examdetails[2][3pt]{%
189   \parbox[t]{#2}{%
190     \begin{mdframed}[linewidth=#1]
191       \normalsize%
192       {%
193         \bf\letterspace{\defaultletterspace}%
194         \schoolyearabbr@term:\hspace{3pt}\schl@schoolyear
195       }\\[1.0ex]
196       \textbf{\grade@term:}\hspace{3pt}\schl@grade\\[1.0ex]
197       \textbf{\subject@term:}\hspace{3pt}\schl@subject \\[1.0ex]
198       \textbf{\testwriter@term:}\hspace{3pt}\schl@teacher\\[1.0ex]
199       \textbf{\testsupervisor@term:}\\[1.0ex]
200       \textbf{\date@term:}\hspace{3pt}\schl@schldate
201     \end{mdframed}
202   }
203 }

and

204 \newcommand\examdetailsii{%
205   \parbox[t]{0.53\linewidth}{%
206     \begin{center}%
207       \underline{\bf\letterspace{\defaultletterspace}\schoolyear@term\ \schl@schoolyear}%
208     \end{center}
209     \begin{tabular}{|r|c|r|c|}
210       \hline
211       {\bf\letterspace{\defaultletterspace}\lastname@term:} & \multicolumn{3}{|c|}{} \\
212       \hline
213       {\bf\letterspace{\defaultletterspace}\name@term:} & \multicolumn{3}{|c|}{} \\
214       \hline
215       {\bf\letterspace{\defaultletterspace}\examnoabbr@term:} & %
216       & {\bf\letterspace{\defaultletterspace}\MakeUppercase{\grade@term:}} & \\
217       & & \schl@grade & \\
218       \hline
219       {\bf\letterspace{\defaultletterspace}\MakeUppercase{\subject@term:}} & %
220       & \multicolumn{2}{|c|}{\schl@subject} & \\
221       \hline
222       {\bf\letterspace{\defaultletterspace}\MakeUppercase{\date@term:}} & \schl@schldate
223       & {\bf\letterspace{\defaultletterspace}\time@term:} & %
224       & \schl@examtime\\
225       \hline
226     \end{tabular}
227   }

```



```

228 }
\signatures      Some types of written tests end with the names of the headmaster and the teacher(s)
                  followed by handwritten signatures. Macro \signer{<name>} accepts the name of a
                  signer. \signatures[<role>]{<signer(s)>} prints the name(s) of the <signer(s)> under
                  a line with the <role> of the signer(s). \signatureslength is the length of the
                  \signatures block.
229 \newcommand\signer[1]{\par #1}
230 \newcommand\signatures[2][\headmaster@term]{%
231   \parbox[t]{\signatureslength}{%
232     \setlength \baselineskip{\signaturelineskip}
233     \begin{center}
234       #1 \\\ #2
235     \end{center}
236   }
237 }

\wish            \wish prints \schl@wish, a default wish for tests.
238 \newcommand\wish[1][\schl@wish]{%
239   \begin{center}
240     {\LARGE\bf #1}
241   \end{center}
242 }

```