

L^AT_EX Showcase*Lukasz Strozek*

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1 Predefined commands in lucas.sty

`\myheader {left-hand header}{right-hand header}{title}{authors}` – Displays the header. (►`fancyhdr`)
`\myasst {subject}{number}` – Displays the assignment header
`\myline {command}` – Displays this line
`\myproblem {number}` – Displays the problem header
`\mysection {title}` – Displays a section
`\mysubsection {title}` – Displays a subsection
`\mysubsubsection {title}` – Displays a sub-subsection
`\pp {numerator}{denominator}` – Partial derivative
`\myfn` – Resets the footnote
`\tsup` – Text superscript
`\myding {number}` – Displays a dingbat, e.g. '025 gives ☞. (►`bbding`)
`\myyes`, `\myno` – ✓, ✗. (►`bbding`)
`\pa`, `\pb`, `\pc`, `\pd`, `\pe` – Blank space, equivalent width of 1, 2, 3, 6, and 9 zeros, respectively

2 Margin settings in lucas.sty

```

\textwidth = 6.5 in
\textheight = 8.5 in
\oddsidemargin = 0.0 in
\evensidemargin = 0.0 in
\topmargin = -0.5 in
\headheight = 0.5 in
\headsep = 0.5 in
\parskip = 0.2 in
\parindent = 0.0 in

```

3 New commands, Counters

```

\let\origPsi\Psi
\renewcommand{\Psi}{\ensuremath{\origPsi}\xspace}

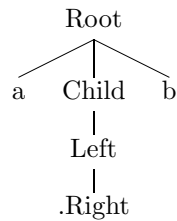
\newcommand{\hello}[1]{\textbf{#1}}

\newcounter{mytom}
\setcounter{mytom}{0}
\addtocounter{mytom}{1}
\themytom

```

4 Trees, Algorithms, Listings, Verbatim Includes

(►qtree)



```
\Tree [ .Root a [ .Child [ .Left .Right ] ] b ]
```

(►newalg)

TREE-SUCCESSOR(x)

```

1  if right[ $x$ ]  $\neq$  NIL
2    then return TREE-MIN(right[ $x$ ])
3   $y \leftarrow p[x]$ 
4  while  $y \neq$  NIL and  $x = \textit{right}[y]$ 
5    do  $x \leftarrow y$ 
6      $y \leftarrow p[y]$ 
7  return  $y$ 

```

```

\begin{algorithm}{Tree-Successor}{x}
\begin{IF}{right[x] \neq \NIL}
\RETURN
\CALL{Tree-Min}{right[x]}
\end{IF} \\\
y \= p[x] \\\
\begin{WHILE}
{y \neq \NIL \text{and} x=right[y]}
x \= y \\\
y \= p[y]
\end{WHILE} \\\
\RETURN y
\end{algorithm}

```

(►listings)

```

1  #include <stdio.h>
2
3  int main(void)
4  {
5      printf("Hello world!\n");
6      return(0);
7  }

```

(►verbatim)

```

\verbatiminput{showcase-alg.tex}
\input{showcase-alg.tex}
\include{showcase-alg.tex}

```

5 Headers, Attributes, Positioning

(►fancyhdr)

```
\pagestyle{fancy}
\fancyhead[LE,L0]{Lukasz Strozek} % only for twoside option
\fancyhead[LE,L0]{\begin{tiny}Typeset in \LaTeX{}\end{tiny}}
\fancyfoot[C]{\thepage} % leave blank for no page numbers
```

```
\oldstylenums {number} – Displays old numerals, e.g. 1034
\so {text} – Spaces out text. (►soul)
\st {text} – Strikes text through. (►soul)
```

```
\begin{textblock}{width}(xpos,ypos)
need ►[absolute]textpos
\end{textblock}
```

Getting block width (can be used in tabular for cell widths as `\gnat`):

```
\newlength{\gnat}
\settowidth{\gnat}{\textbf{small}}
```

```
\textsc – SMALL CAPS
\texttt – Typewriter
\reflectbox – egsmI rorriM
\" {letter} – umlauts, e.g. Lindelöf
```

a big font .

```
\newfont{\bigfont}{cmr12 scaled 2400}
\bigfont a big font \rm.
```

```
\mathbb{R} \newcommand{\R}{
  {\sf R\hspace*{-0.95ex}\rule{0.15ex}{1.5ex}\hspace*{0.9ex}}
}
\R
```

`\rotatebox {angle}{text}` – Rotating . (►rotating)

(►rotating)

```
\begin{sideways}
For sideways text
\end{sideways}
```

For line spacing:

```
\renewcommand{\baselinestretch}{1.3}\normalsize
```

6 Tables, Rules

(►`slashbox`)

	Date	5/31	6/1
Room			
Room			
Auditorium			

```
\begin{tabular}{|l||*2{c|}}
\hline
\backslashslashbox[30mm]{Room}{Date} &
\makebox[3em]{5/31}&\makebox[3em]{6/1}\\
\hline\hline
Room &&\\
\hline
Auditorium &&\\
\hline
\end{tabular}
```

`\cline {from-to}` – Partial horizontal line, *e.g.* `\cline{1-2}` $\overline{1\ 2}$ 3 4

`\multirow {number}*{text}` – Cell spanning more than one row. (►`multirow`)

rowspan	row 1
	row 2

`\begin{tabular*}{\textwidth}{@{}l@{\extracolsep{\fill}}r@{}}` Wide table split to left & right

`\framebox (x,y){text}` – Frame a box

`\parbox {width}` – [Box of certain width]

`\renewcommand \arraystretch {ratio}` – Row stretch for tables

`\multicolumn {number}{positioning}{text}` – Cells spanning multiple columns. (►`multicol`)

`\vline` – Display a single-row vertical line

`\centering` – Inside a *p*-type cell: centers the cell

`\columnwidth`, `\textwidth` – lengths for tabular parameters

`\rule {width}{thickness}` – draw a horizontal rule, *e.g.* `\rule{2in}{1pt}`

7 Math mode, Align mode

`\nonumber` – After the line, omits equation numbering for the line

`\substack {text\text{...}}` – Stacks lines, *i.e.*

$$\sum_{\substack{1 < x < 10 \\ 1 < y < 10}} xy$$

`\Bigg`, `\bigg`, `\Big`, `\big`, `\left`, `\right` – Parentheses of different sizes

`\hspace {width}` – Blank space

`\ , \; , \: , \.` – Spaces of different sizes

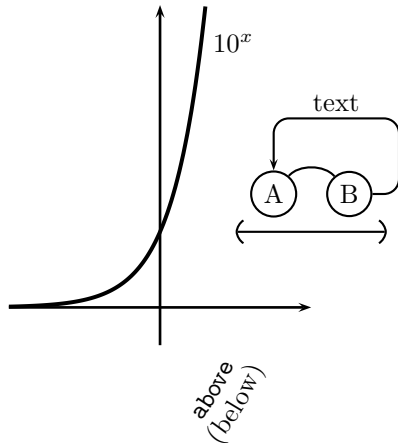
`\stackrel {ontop}{base}` – Stacks one symbol on top of another, *e.g.* `\stackrel{\wedge}{=}` gives $\overset{\wedge}{=}$

`\xrightarrow {ontop}` – Draws a long arrow, *e.g.* $f(x) \xrightarrow{\text{cond.}} x$

`\allowdisplaybreaks` – Allows `align` to break between pages

8 PSTricks

`\psset {unit=length}` – set the unit to given length
`\psplot [plotstyle=curve]{xfrom}{xto}{expression}`
`\pstextpath {curve}{\shortstack{text}}` – Typeset text along curve. (►`pst-text`)



```
\psset{unit=1cm}
\begin{pspicture}(-2,-0.5)(9.5,4)
\cnodeput(1.5,1.5){A}{A}
\cnodeput(2.5,1.5){B}{B}
\psset{labelsep=2pt}
\psline[rbracketlength=0.3,tbarsize=0.3]{(-)}(1,1)(3,1)
\ncloop[linearc=.2,loopsize=1,angleB=90]{->}{B}{A}
\Bput{text}
\ncarc[arcangle=50]{-}{A}{B}
\psline[linewidth=1pt]{->}(-2,0)(2,0)
\psline[linewidth=1pt]{->}(0,-0.5)(0,4)
\psplot[plotstyle=curve,linewidth=1.5pt]{-2}{0.6}
{10 x exp}
\rput[1](0.7,3.5){$10^x$}
\psset{linestyle=none}
\pstextpath{\psarc(-2,0.5){3.5}{320}{360}}
{\shortstack{\texttt{above}}\{(below)\}}
\end{pspicture}
```

`\SpecialCoor` – Enables the use of raw PostScript for graphics

```
\SpecialCoor
\multido{\iy=-3+1}{7}{%
\multido{\ix=-3+1}{7}{%
\pstVerb{/x \ix\space def
/y \iy\space def}
\psline{->}(! x 0.3 x mul sub y 0.3 y mul sub)
(! x 0.3 x mul add y 0.3 y mul add)}}}
```

PostScript operations:

```
abs    add    atan    ceiling  cos    div    dup    exp
floor  ln     log     mode     mul    neg    round  sin
sqrt   sub    truncate
```

9 Miscellaneous

Installing packages: copy `.ins` and rest to `texmf*/tex/latex/[package]/`, sudo latex the `.ins`, `texhash`.
 Installing fonts – `mktextfm [font]` (no extension) after having done `texhash`.