

# The T<sub>E</sub>X Hierarchy

Donald Arseneau<sup>\*</sup>, Raymond Chen<sup>†</sup>, Victor Eijkhout<sup>‡</sup>

## Introduction

For the UNIX operating system, a list of characterizations exists describing what constitutes a novice, a user, a guru, . . . Here we give a similar list for users of T<sub>E</sub>X. The reader is kindly asked to take this purely in a humorous vein.

## The name

**Novice** says ‘tecks’.

**User** says ‘tecchhh’ but still moistens the screen doing it.

**Programmer** correctly pronounces ‘T<sub>E</sub>X’.

**Wizard** has made at least one bad pun on the name T<sub>E</sub>X.

**Guru** knows that even Knuth says ‘tek’.

## The manual

**Novice** owns the TeXbook.

**Programmer** has just made a first correction to the text.

**Hacker** has formatted `texbook.tex` and knows about Knuth’s ‘little joke’.

**Wizard** is thinking of ways to supply the missing ‘tactile and olfactory sensations’ of T<sub>E</sub>X.

**Guru** thinks ‘T<sub>E</sub>X: the program’ is more useful.

## The index of the T<sub>E</sub>X book

**Novice** is confused by the number of references for each entry, has laughed at ‘T<sub>E</sub>X: bad puns on the name’, and has counted the number of middle names of Barbara Beeton.

**User** knows about Bo Derek (in the T<sub>E</sub>Xbook), Jill Knuth (in the Metafont book), and Ellen Gilkerson (in the L<sup>A</sup>T<sub>E</sub>X book).

**Wizard** knows why some entries are italicized or underlined.

**Guru** knows to look up Bourbaki for smart line breaks in paragraphs.

## The system

**Novice** has found many bugs in T<sub>E</sub>X.

**User** has learned that there are no bugs in T<sub>E</sub>X, but doesn’t understand why ‘it doesn’t work!’.

**Guru** has actually found bugs in T<sub>E</sub>X; frames the check from DEK.

**Guru extraordinaire** cashes checks from DEK.

## Famous people

**Novice** is not sure whether Leslie Lamport is a man or a woman.

**User** knows not to capitalize ‘barbara beeton’.

**Wizard** knows how to pronounce ‘Knuth’ and ‘Eijkhout’.

**Guru** Knuth has asked about their middle name(s).

## Programming style

**Novice** uses grouping without knowing why.

**User** writes `\bf{ . . . }` and doesn’t understand what went wrong.

**Programmer** writes `\def\bold#1{\bf #1}`.

**Programmer first class** writes `\long\def\bold#1{\bf #1}`.

**Hacker** writes `\def\beginbold{\bgroup\bf}`  
`\def\endbold{\egroup}`

**Wizard** writes `\def\bold{\bgroup\bf\let\next=}`.

**Guru** writes `\def\bold#{\bgroup\bf\let\next=}`.

## Style (cont’d)

**Novice** has heard of ties.

**User** inserts ties and writes ‘`dr.\ ’`’.

**Hacker** writes ‘`dr.\ ’`’, except in bibliographies where `frenchspacing` is in effect.

**Guru** Makes ‘.’ an active character in bibliographies so that ‘D.E. Knuth’ means ‘`D.\,E.\penalty 300\ Knuth`’.

## Errors

**Pre-novice** wonders why ‘Q’ takes so long to quit.

**Novice** will exit on the first ‘error’, even if the message starts with ‘OK’.

**User** keeps pressing return to scroll past errors, until that gets into an infinite loop.

**Guru** having written the input file with ‘`cat >`’ in the first place, the guru will type ‘i’ at an error, correcting all typos and supplying all missing mac-

<sup>\*</sup>Triumpf, 4004 Wesbrook Mall, Vancouver BC, Canada V6T 1Zt, [asnd@erich.triumf.ca](mailto:asnd@erich.triumf.ca)

<sup>†</sup>Microsoft Corporation, One Microsoft Way, Redmond WA 98052-6399, [raymond@microsoft.com](mailto:raymond@microsoft.com)

<sup>‡</sup>Department of Computer Science, University of Tennessee at Knoxville, Knoxville TN 37996-1301, [eijkhout@cs.utk.edu](mailto:eijkhout@cs.utk.edu)

ros interactively, thereby successfully completing the formatting in the first run.

### Capacity Exceeded . . .

**Novice** constantly runs into the ‘TeX capacity exceeded’ error and asks the admin to build a larger version.

**User** knows how to find unbalanced curly braces.

**Hacker** Occasionally runs into the ‘TeX capacity exceeded’ error and usually finds a way around them.

**Wizard** knows how to increase T<sub>E</sub>X’s capacity, taking care to read DEK’s warnings about setting the values too high.

**Guru** ignores DEK’s warnings.

### Printing and previewing

**Novice** prints the whole document after each run of T<sub>E</sub>X.

**User** knows of previewers.

**Programmer** knows at least two previewers and vigorously argues why one is utter garbage.

**Wizard** thinks that

```
\tracingoutput=1
\showboxdepth\maxdimen
\showboxbreadth\maxdimen
```

is the best previewer.

### Macros

**Novice** has heard of macros, but has never seen one.

**User** writes macros that are used once, and that are longer than the code they replace.

**Programmer** having been bitten by unwanted spaces, writes macros that don’t contain spaces, and every line ends with a ‘%’.

**Hacker** has written self-modifying macros, writes `\endlinechar=-1` or `\catcode\^M=9` to prevent having to put %’s at the end of lines in macros.

**Guru** has written macros containing #####, more than 3 `\expandafter`’s in a row, and the sequence `\expandafter\endcsname.item[Fossil]` Still has macros written in T<sub>E</sub>X78.

### Macros (cont’d)

**Novice** has written a macro `\box` to draw a box.

**User** has renamed it to `\boxit`.

**Wizard** has redefined `\mbox` so that it can have `\verb` in its arguments.

### L<sup>A</sup>T<sub>E</sub>X

**Novice** uses L<sup>A</sup>T<sub>E</sub>X because colleagues and friends do.

**User** uses L<sup>A</sup>T<sub>E</sub>X, even though colleagues and friends use Microsoft Word, or Word Perfect.

**Wizard** uses L<sup>A</sup>T<sub>E</sub>X for journal and conference submissions, but homegrown macros when working alone.

### L<sup>A</sup>T<sub>E</sub>X errors

**Novice** actually takes the manual when it says ‘LaTeX error. See LaTeX manual for explanation.’

**User** knows what the relevant bits of L<sup>A</sup>T<sub>E</sub>X error messages are.

**Programmer** knows what to type at the question mark when L<sup>A</sup>T<sub>E</sub>X reports ‘`\begin{document}` ended by `\end{itemize}`’.

**Wizard** doesn’t make errors in L<sup>A</sup>T<sub>E</sub>X, and answers questions about L<sup>A</sup>T<sub>E</sub>X by editing `latex.tex`.

**Guru** knows whether to edit `latex.tex`, `lplain.tex`, `article.sty`, or `art10.sty`.

### L<sup>A</sup>T<sub>E</sub>X style

**Novice** types `a_{1}` because the error in `a_{1}` occurred on the ‘\_’.

**User** types `$a_{1}` because Leslie Lamport says so.

### Other packages

**Novice** could do more in Pagemaker.

**User** doesn’t see the difference between T<sub>E</sub>X macros and Word Perfect macros.

**Hacker** writes macros to make T<sub>E</sub>X look more like troff.

**Wizard** types `\input troff` to process old troff files.

**Guru** types

```
\input txtmacros
\input text.txt
```

to format plain text.

### Life, everything

**Novice** thinks that learning T<sub>E</sub>X will take a long time.

**User** realises that it wasn’t so bad after all.

**Programmer** tries to convince himself that the next macro is really going to save time in the future.

**Wizard** daydreams idly about how much he could have done with his life if he had never heard of T<sub>E</sub>X.

**Guru** realises that a life without T<sub>E</sub>X is not worth living.

(Also thanks to Barbara Beeton, Tim Chow, Denys Duchier, Dan Ellard, Michael Sofka.)