The PLAIN Truth: \texttt{\textbackslash buildrel}

Barbara Beeton

Changes to \texttt{\LaTeX}, though infrequent, are usually somewhat inscrutable. This column will attempt to illustrate with (relatively) simple examples the reasons for some of the changes that have occurred since \TeX was “frozen” at version 1.0.

\texttt{\textbackslash buildrel}

All changes to \texttt{\textbackslash buildrel} have taken place where the \texttt{*} appears in this “generic” definition:

\begin{verbatim}
\def\buildrel#1\over#2{\mathrel{\mathop{*#2\mathclose{-#1})}}
\end{verbatim}

A handy little tester for this macro is built right into \texttt{PLAIN}:

\begin{verbatim}
\def\doteq{\buildrel\textstyle.\over=)}
\end{verbatim}

Let’s use this, plus a simple variation with \texttt{x} replacing \texttt{=} to show the change history.

1. The original definition contained nothing but the argument within \texttt{\mathop}.

   \begin{verbatim}
a \doteq b \times c
\end{verbatim}

   This works well enough for \texttt{\doteq}, but it’s just luck—single characters within \texttt{\mathop} have their baselines altered so that they align vertically with the axis (rule 13, The \TeXbook Appendix G, pp. 443-444).

2. The next iteration inserted \texttt{\null}.

   \begin{verbatim}
a \doteq \null b \times c
\end{verbatim}

   \texttt{\null} is type Ord, which generates space when adjacent to a symbol of type Rel.

3. \texttt{\hskipOpt} eliminates this space:

   \begin{verbatim}
a \doteq \null b \times c
\end{verbatim}

   however, it requires 3 words of memory, to accommodate stretch and shrink, which aren’t needed here.

4. \texttt{\kernOpt} accomplishes the same thing, using only 2 words of memory.

   \begin{verbatim}
a \doteq b \times c
\end{verbatim}

This is presumably the “final” word on the subject.

\begin{enumerate}
\item \texttt{\doteq} is a pointer to on-line documentation of how to use \LaTeX at the specific site. The installer must modify that pointer and create the pointed-at documentation. The file \texttt{SAMPLE.TEX} is a more complete tutorial.
\end{enumerate}
Another goodie that's in this release is the proc document-style option. It produces double-column conference proceedings format on 8 1/2 × 11 paper. (Instead of sending in your camera-ready copy on those large sheets that they reduce by 25%, you can produce it on a high-quality output device and send it to them at its actual size.)

It has come to my attention that some installers have modified the standard document styles. THIS IS STRICTLY FORBIDDEN. The only changes to these styles that should be made are those necessitated by the use of different fonts. If you don't have a font that's called for in the standard style, do the best you can. If this produces noticeably different results, mention the difference in the Local Guide. Users expect the standard styles to produce the same output at different sites. If you must create local styles, give them different names and describe them in the Local Guide. The new manual describes what happens when SAMPLE.TEX is run with some modifications. Users will be unhappy if changes to the document style produce different results than is claimed in the book.

Speaking of document styles... before creating a document style for anyone else to use, talk to a typographic designer. People with no training in design who do their own formatting invariably do a rotten job. This is discussed in the new manual.

Enjoy.

A Solution to the Tower of Hanoi Problem Using \TeX

Bruce Leban

Here is a solution to the classic Tower of Hanoi problem using \TeX. This solution actually produces a printed solution to the problem illustrating the states of the stacks at each stage. Examination of this program may be instructive in understanding the operations of \TeX's macro packages.

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