Installation of the new font selection scheme, β-Test release

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Abstract

This file gives some basic information which are necessary to generate a format with the new font selection scheme. It is essentially the last part of `fontsel.tex` the article that appeared in TUGboat. However, it was modified and updated to reflect changes within the font selection scheme, wheras `fontsel.tex` was left unchanged.

When setting up a new format one has to start IniTEX with `lplain.tex` as the input file. After displaying some progress report on the terminal, `lplain.tex` will try to `\input` the files `hyphen.tex` and `lfonts.tex`.

It seems a good idea to rename these files because, when TEX complains that it cannot find them and asks you to type in another file name, you get the chance to substitute your favourate hyphenation patterns without changing `lplain.tex` or copying something to `hyphen.tex`. The transcript file will show the name of the file used which is very useful to debug weird errors (later).

When the point is reached where TEX wants to read in `lfonts.tex`, you now have to specify '`lfonts.new`'. After processing this file (which will take some time), IniTEX stops once more since it cannot find the file `xxxlfont.sty`. This is intentional; in this way you may now specify the desired default by entering one of the following file names:

`oldlfont.sty` If you choose this file, your format will be identical to the standard LATEX version 2.09 except that a few additional commands (like `\normalshape`) are available. Of course, documents or style options which explicitly refer to things like `\tentt` will produce error messages since such internal commands are no longer defined.[1] Nevertheless it is easy to fix the problem in such a case: if we know that `\tentt` referred to `cmtt10`, i.e. Computer modern typewriter normal at 10pt, we can define it as

[1] By the way, such documents were at no time portable since Leslie Lamport stated that it was always permissible to customize `lfonts.tex` according to the local needs. Therefore this is *not* an incompatible change.

```
\newcommand{\tentt}{\fontfamily{cmtt}%
    \fontseries{m}\fontshape{n}\fontsize{10}{12pt}%
    \selectfont}
```

Since we assume the '`oldlfont`' option as default, where `\tt` resets series and shape, the definition could be shortened to

```
\newcommand{\tentt}{\fontsize{10}{12pt}\tt}
```

To get the new way of font selection as described in `fontsel.tex` (e.g. where `\tt` simply means to switch to another family) you only have to add the '`newlfont`' style option to the `\documentstyle` command in your document.

`newlfont.sty` This is just the counterpart to `oldlfont.sty`: it will make the new mechanism the default and you have to add '`oldlfont`' as a style option if you want to process older documents which depend on the old mechanism.

`basefont.tex` This file is similar to `newlfont.sty` but does not define the LaTeX symbol fonts. These fonts contain only a few characters which are also included in the AMS symbol fonts. Therefore we provided the possibility of generating a format which doesn't unnecessarily occupy one of the (only) sixteen math groups within one math version. Using this file you can easily switch to the old scheme (adding '`oldlfont`' as an option), to the new scheme with LaTeX symbol fonts (using '`newlfont`') or to the new scheme with additional AMS fonts by using either the style option '`amsfonts`' (fonts only) or the style option '`amstex`' (defining the whole set of $\mathcal{AMS}$-TeX macros in a LaTeX like syntax).

We suggest using the `basefont.tex` file since the new font selection scheme will be incorporated into LaTeX version 2.10, but on installations with many users it might be better to switch smoothly to the new font selection scheme by first using '`oldlfont`' as a default.

Anyway, after reading the file chosen, TeX will continue by processing `latex.tex` and finally displaying the message "Input any local modifications here". If you don't dare to do so, use `\dump` to finish the run. This will leave you with a new `.fmt` file (to be put into TeX's format area) and the corresponding transcript file. It isn't a very good idea to delete this one because you might need it later to find out what you did when you dumped the format!

1 Remarks on the development of this interface

We started designing the new font selection scheme around April 1989. A first implementation was available after one month's work and thereafter the prototype version ran successfully for some months at a few sites in Germany and the UK. Frank's visit to Stanford as well as our work on the '`amstex`' style option brought new aspects to our view. The result was a more or less complete redefinition of the LaTeX interface for this font mechanism. It was a long way from the first sketch (which was about five pages in Frank's notebook) to the current implementation of the interface which now consists of nearly 2000 lines of code and about 4000 lines of internal documentation. The $\mathcal{A}\mathcal{M}\mathcal{S}$-TeX project itself, which triggered this reimplemenation, has about the same dimensions. Surely in such a huge software package one will find typos and bugs. But we hope that most of the bugs in the code are found by now. It is planned that the new font selection scheme will replace the old one in LaTeX version 2.10. We therefore hope that this pre-release which runs in version 2.09 will help to find all remaining problems so that the switch to version 2.10 will be without discomfort to the user.

2 Acknowledgements

During this project we got help from many people. A big 'thank you' to all of them, especially to Michael Downes from the AMS for his cooperation and help, to Stefan Lindner for his help with the Atari TeX and to Sebastian Rahtz for playing a willing guinea-pig. Finally we also want to thank Ron Whitney who did a marvelous job on all our articles so far. This time we posed some extra problems because he had to first make a new format in order to read how to make a new format.

3 List of distributed files

`lfonts.new` The new version of `lfonts.tex`, to be copied to a file of this name after the old `lfonts.tex` has been renamed.

`fontdef.ori` The font definitions for the computer modern fonts in the distribution by Donald E. Knuth. To be copied to `fontdef.tex` if this selection is to be used.

`fontdef.max` Complete font definitions for the computer modern fonts and the AMSFonts collections. To be copied to `fontdef.tex` if this selection is to be used.

`preload.ori` Preloads the same fonts as the old `lfonts.tex` does. To be copied to `preload.tex` if this is desired.

`preload.min` Preloads only the absolute minimum of fonts. To be copied to `preload.tex` if this is desired.

`newlfont.sty` Selects new version of font selection for LaTeX.

`oldlfont.sty` Selects old version of font selection for LaTeX.

`basefont.tex` Like `newlfont.sty`, but does not define the LaTeX symbol fonts.

`margid.sty` Style file that defines all ⟨*math alphabet identifiers*⟩ to have one argument. This is the default that is built in into the new font selection scheme. Therefore this style file is only necessary if the installation decided to load '`nomargid.sty`' at dump time.

`nomargid.sty` In contrast to `margid.sty`, defines all ⟨*math alphabet identifiers*⟩ to switch to the alphabet. This style option is necessary if you want to be compatible to the old LaTeX syntax *in math mode only*.

`tracefnt.sty` Style file that allows the tracing of font usage. Use `\tracingfonts` with values 1 to 3 and watch what happens.

`syntonly.sty` Defines the `\syntaxonly` declaration. This can be used in the preamble of a document to suppress all output.

`euscript.sty` Contains the definitions to use the Euler script fonts.

There are some more files included in the distribution. For a complete set see the `readme` files.

Together with the AMS-LaTeX package (that uses the the new font selection scheme) there are some additional file that might be of interest of many users even even if they don't intend to use the mathematical features of the AMS-LaTeX package. This includes the files:

`amsfonts.sty` Defines the commands to select symbols from the AmSFonts collection.

`amsbsy.sty` Defines the `\boldsymbol` command.

`amssymb.sty` Defines additional AMS-TeX symbols.

`amstext.sty` Defines the AMS-TeX `\text` command.

Note, that these files come with the AMS-LaTeX distribution and not with the standard fontsel package.