The program `nfssfont`

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This file is maintained by the LaTeX Project team.
Bug reports can be opened (category `latex`) at
https://latex-project.org/bugs.html.

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1 Introduction

Within the NFSS distribution there is a LaTeX file `nfssfont.tex` which can be used to test new fonts, produce font tables showing all characters, etc. This is an addaption of a program originally written by Don Knuth.

When you run this file through LaTeX you will be asked to enter the name of the font to test. Your answer should be the external font name without any extension, e.g. `cmr10` (Computer Modern Roman 10pt) or `yinit` (Yannis Haralambous' Initial font).

Alternatively (since version 2.1), you can press ⟨*return*⟩ at this point. In that case a dialog is started that asks you for the font characteristics in NFSS notation, i.e., first for the encoding scheme (default `T1`), then for the family name (default `cmr`), then for the series (default `m`), then for the shape (default `n`), and finally for the size (default `10pt`).

You are then requested to enter a command. Probably the most important one is `\table`, which will produce a font chart. To switch to a new test font, type `\init`; to finish the test, type `\bye`; and to learn about all the other possible tests type `\help`.

This is at the moment only a crude addaption of the test program for the Computer Modern fonts by Donald Knuth.

2 A driver for this document

The next bit of code contains the documentation driver file for TeX, i.e., the file that will produce the documentation you are currently reading. It will be extracted from this file by the DOCSTRIP program.

```
1 ⟨*driver⟩
2 \documentclass{ltxdoc}
3 % \OnlyDescription    % comment out for implementation details
4 \begin{document}
```

---

*Adapted from code written by Donald E. Knuth

```
5    \DocInput{nfssfont.dtx}
6 \end{document}
7 ⟨/driver⟩
```

3 The code

A testbed for font evaluation (see The METAFONTbook, Appendix H) changed for LaTeX with NFSS.

This program should get a complete rewrite some day or at least some code documentation. Any volunteers?

```
8 ⟨*code⟩
9 \documentclass{article}
10 \nofiles
11 \setlength\textwidth{470pt}
12 \setlength\oddsidemargin{0pt}
13 \addtolength\textheight{7\baselineskip}
14 \addtolength\topmargin{-3\baselineskip}
15
16 \def\sevenrm{\fontencoding{OT1}\fontsize{7}{9pt}\rmfamily}
17
18 \typeout{*********************************************}
19 \typeout{* NFSS font test program version <\nfssfontfileversion>}
20 \typeout{*}
21 \typeout{* Follow the instructions}
22 \typeout{*********************************************}
23 \typeout{}
24
25 \tracinglostchars=0
26 \tolerance=1000
27 \raggedbottom
28 \parindent=0pt
29 %\newlinechar='@               %FMi
30 \hyphenpenalty=200
31 \doublehyphendemerits=30000
32
33 \newcount\m \newcount\n \newcount\p \newdimen\dim
34 \chardef\other=12
35
36 \def\today{\ifcase\month\or
37   January\or February\or March\or April\or May\or June\or
38   July\or August\or September\or October\or November\or December\fi
39   \space\number\day, \number\year}
40 \def\hours{\n=\time \divide\n 60
41   \m=-\n \multiply\m 60 \advance\m \time
42   \twodigits\n\twodigits\m}
43 \def\twodigits#1{\ifnum #1<10 0\fi \number#1}
```

We first ask for a real external font name...

```
43 \def\init{%
44  \typein[\currfontname]%
45    {Input external font name, e.g., cmr10^^J%
46     (or <enter> for NFSS classification of font):}%
```

If the answer is a real font name (like "cmr10") then we have no idea what the encoding of this font is, so in this case we record the word "unknown" and internally assume T1 encoding. Commands other than \table are then most likely going to fail, unless that assumption was correct.

```
47 \def\encoding{unknown}%
48 \fontencoding{T1}\selectfont
```

If the user answers with "return" we ask for the NFSS classification of the font in form of encoding, family, series, shape, and size offering a default each time.

```
49 \ifx\currfontname\empty
50 \typein[\encoding]{^^J^^J*** NFSS classification
51                   ***^^J^^JFont encoding [T1]:}%
52 \ifx\encoding\empty
53  \fontencoding{T1}%
54  \def\encoding{T1}%
55 \else
```

Depending on the chosen encoding we have the problem, that the encoding support information may not be available (only for T1 and OT1 this is preloaded in the kernel, all other encodings normally need a declaration in the preamble). So here we attempt to load this support file even though it is actually already too late for this.

```
56    \edef\next{%
57      \lowercase{\def\noexpand\next{\encoding enc.def}}}%
58    \next
59    \makeatletter
60    \InputIfFileExists\next
61        {}%
```

If the encoding support file is not found this may indicate an error, eg something misspelled. However, it may equally mean that we dealing with a math font encoding for which no encoding support is available.

```
62        {\PackageWarningNoLine{nfssfont}%
63         {Encoding file '\next' not found.%
64           \MessageBreak
65            You might have misspelt the name of the encoding
66           \MessageBreak
67            or perhaps this encoding is not a text encoding,
68          \MessageBreak
69            in which case you will probably only be able to
70          \MessageBreak
71            run the \noexpand\table command successfully}%
```

But actually the situation is even worse, as some math encodings do have such support files. So for them we need to make the encoding known to NFSS in some other way, otherwise we could not even find the external font name, let alone typesetting a \table.

```
72        \expandafter\let\csname T@\encoding\endcsname\empty
73        }%
74    \makeatother
75    \let\next\relax
76    \fontencoding\encoding
77 \fi
78 \typein[\family]{Font family [cmr]:}%
```

```
 79    \relax
 80    \ifx\family\empty
 81      \fontfamily{cmr}%
 82    \else
 83      \fontfamily\family
 84    \fi
 85    \typein[\series]{Font series [m]:}%
 86    \ifx\series\empty
 87      \fontseries{m}%
 88    \else
 89      \fontseries\series
 90    \fi
 91    \typein[\shape]{Font shape [n]:}%
 92    \ifx\shape\empty
 93      \fontshape{n}%
 94    \else
 95      \fontshape\shape
 96    \fi
 97    \typein[\size]{Font size [10pt]:}%
 98    \ifx\size\empty
 99      \fontsize{10}{10}%
100    \else
101      \fontsize\size\size
102    \fi
```

Finally select the font and assign it to \currfontname.

```
103    \selectfont\edef\currfontname{\fontname\font}%
104  \fi
105  \startfont
106  \message{Now type a test command (\string\help\space for help):}}

107 \def\startfont{\font\testfont=\currfontname
108   \leftline{\sevenrm Test of font \currfontname\unskip\ (encoding
109            \encoding\unskip) on \today\ at \hours}
110   \medskip
111   \testfont \setbaselineskip
112   \ifdim\fontdimen6\testfont<10pt \rightskip=0pt plus 20pt
113   \else\rightskip=0pt plus 2em \fi
114   \spaceskip=\fontdimen2\testfont % space between words (\raggedright)
115   \xspaceskip=\fontdimen2\testfont \advance\xspaceskip
116   by\fontdimen7\testfont}

117 {\catcode`\|=0 \catcode`\\=\other
118 |gdef|help{|message{%
119 \init switches to another font;^^J%
120 \stop or \bye finishes the run;^^J%
121 \table prints the font layout in tabular format;^^J%
122 \text prints a sample text, assuming TeX text font conventions;^^J%
123 \sample combines \table and \text;^^J%
124 \mixture mixes a background character with a series of others;^^J%
125 \alternation interleaves a background character with a series;^^J%
126 \alphabet prints all lowercase letters within a given background;^^J%
127 \ALPHABET prints all uppercase letters within a given background;^^J%
128 \series prints a series of letters within a given background;^^J%
129 \lowers prints a comprehensive test of lowercase;^^J%
130 \uppers prints a comprehensive test of uppercase;^^J%
```

```
131 \digits prints a comprehensive test of numerals;^^J%
132 \math prints a comprehensive test of TeX math italic;^^J%
133 \names prints a text that mixes upper and lower case;^^J%
134 \punct prints a punctuation test;^^J%
135 \bigtest combines many of the above routines;^^J%
136 \help repeats this message;^^J%
137 and you can use ordinary TeX commands (e.g., to \input a file).}}}
138
139 \def\setbaselineskip{\setbox0=\hbox{\n=0
140 \loop\char\n \ifnum \n<255 \advance\n 1 \repeat}
141 \baselineskip=6pt \advance\baselineskip\ht0 \advance\baselineskip\dp0 }
142 \def\setchar#1{{\escapechar-1\message{\string#1 character = }%
143   \def\do##1{\catcode`##1=\other}\dospecials
144   \read-1 to\next
145   \expandafter\finsetchar\next\next#1}}
146 \def\finsetchar#1#2\next#3{\global\chardef#3=`#1
147   \ifnum #3=`\# \global\chardef#3=#2 \fi}
148 \def\promptthree{\setchar\background
149   \setchar\starting \setchar\ending}
150
151 \def\mixture{\promptthree \domix\mixpattern}
152 \def\alternation{\promptthree \domix\altpattern}
153 \def\mixpattern{\0\1\0\0\1\1\0\0\0\1\1\1\0\1}
154 \def\altpattern{\0\1\0\1\0\1\0\1\0\1\0\1\0\1\0}
155 \def\domix#1{\par\chardef\0=\background \n=\starting
156   \loop \chardef\1=\n #1\endgraf
157   \ifnum \n<\ending \advance\n 1 \repeat}
158
159 \def\!{\discretionary{\background}{\background}{\background}}
160 \def\series{\promptthree \!\doseries\starting\ending\par}
161 \def\doseries#1#2{\n=#1\loop\char\n\!\ifnum\n<#2\advance\n 1 \repeat}
162 \def\complower{\!\doseries{`a}{`z}\doseries{'31}{'34}\par}
163 \def\compupper{\!\doseries{`A}{`Z}\doseries{'35}{'37}\par}
164 \def\compdigs{\!\doseries{`0}{`9}\par}
165 \def\alphabet{\setchar\background\complower}
166 \def\ALPHABET{\setchar\background\compupper}
167
168 \def\lowers{\docomprehensive\complower{`a}{`z}{'31}{'34}}
169 \def\uppers{\docomprehensive\compupper{`A}{`Z}{'35}{'37}}
170 \def\digits{\docomprehensive\compdigs{`0}{`4}{`5}{`9}}
171 \def\docomprehensive#1#2#3#4#5{\par\chardef\background=#2
172   \loop{#1} \ifnum\background<#3\m=\background\advance\m 1
173   \chardef\background=\m \repeat \chardef\background=#4
174   \loop{#1} \ifnum\background<#5\m=\background\advance\m 1
175   \chardef\background=\m \repeat}
176 \def\names{ {\AA}ngel\aa\ Beatrice Claire
177   Diana \'Erica Fran\c{c}oise Ginette H\'el\`ene Iris
178   Jackie K\=aren {\L}au\.ra Mar\{'\i}a N\H{a}ta\{\l}\{\u\i}e {\O}ctave
179   Pauline Qu\^eneau Roxanne Sabine T\~a\{\'\j}a Ur\v{s}ula
180   Vivian Wendy Xanthippe Yv\{\o}nne Z\"azilie\par}
181 \def\punct{\par\dopunct{min}\dopunct{pig}\dopunct{hid}
182   \dopunct{HIE}\dopunct{TIP}\dopunct{fluff}
183   \$1,234.56 + 7/8 = 9\% @ \#0\par}
```

```
184 \def\dopunct#1{#1,\ #1:\ #1;\ `#1'\ ?`#1?\ !`#1!\ (#1)\ [#1]\
185                 #1*\ #1.\par}
186
187 \def\bigtest{\sample
188   hamburgefonstiv HAMBURGEFONSTIV\par
189   \names \punct \lowers \uppers \digits}
190
191 \def\math{\textfont1=\testfont \skewchar\testfont=\skewtrial
192   \mathchardef\Gamma="100 \mathchardef\Delta="101
193   \mathchardef\Theta="102 \mathchardef\Lambda="103 \mathchardef\Xi="104
194   \mathchardef\Pi="105 \mathchardef\Sigma="106 \mathchardef\Upsilon="107
195   \mathchardef\Phi="108 \mathchardef\Psi="109 \mathchardef\Omega="10A
196   \def\ii{i} \def\jj{j}
197   \def\\##1{|##1|+}\mathtrial
198   \def\\##1{##1_2+}\mathtrial
199   \def\\##1{##1^2+}\mathtrial
200   \def\\##1{##1/2+}\mathtrial
201   \def\\##1{2/##1+}\mathtrial
202   \def\\##1{##1,{}+}\mathtrial
203   \def\\##1{d##1+}\mathtrial
204   \let\ii=\imath \let\jj=\jmath \def\\##1{\hat##1+}\mathtrial}
205 \newcount\skewtrial \skewtrial='177
206 \def\mathtrial{$\\A \\B \\C \\D \\E \\F \\G \\H \\I \\J \\K \\L \\M \\N
207   \\O \\P \\Q \\R \\S \\T \\U \\V \\W \\X \\Y \\Z \\a \\b \\c \\d \\e \\f
208   \\g \\h \\\ii \\\jj \\k \\l \\m \\n \\o \\p \\q \\r \\s \\t \\u \\v \\w
209   \\x \\y \\z \\\alpha \\\beta \\\gamma \\\delta \\\epsilon \\\zeta
210   \\\eta \\\theta \\\iota \\\kappa \\\lambda \\\mu \\\nu \\\xi \\\pi
211   \\\rho \\\sigma \\\tau \\\upsilon \\\phi \\\chi \\\psi \\\omega
212   \\\vartheta \\\varpi \\\varphi \\\Gamma \\\Delta \\\Theta \\\Lambda
213   \\\Xi \\\Pi \\\Sigma \\\Upsilon \\\Phi \\\Psi \\\Omega \\\partial
214   \\\ell \\\wp$\par}
215 \def\mathsy{\begingroup\skewtrial='060 % for math symbol font tests
216   \def\mathtrial{$\\A \\B \\C \\D \\E \\F \\G \\H \\I \\J \\K \\L
217     \\M \\N \\O \\P \\Q \\R \\S \\T \\U \\V \\W \\X \\Y \\Z$\par}
218   \math\endgroup}
```

Here we have to ensure that we use a suitable encoding otherwise our octal and hexadecimal constants will appear in whatever encoding the current font is.

```
219 \def\oct#1{\hbox{\fontencoding{OT1}\rmfamily\'{}\kern-.2em\itshape
220           #1\/\kern.05em}}% octal constant
221 \def\hex#1{\hbox{\fontencoding{OT1}\rmfamily
222           \H{}\ttfamily#1}}% hexadecimal constant
223 \def\setdigs#1"#2{\gdef\h{#2}% \h=hex prefix; \0\1=corresponding octal
224   \m=\n \divide\m by 64 \xdef\0{\the\m}%
225   \multiply\m by-64 \advance\m by\n \divide\m by 8 \xdef\1{\the\m}}
226 \def\testrow{\setbox0=\hbox{\penalty 1\def\\{\char"\h}%
227   \\0\\1\\2\\3\\4\\5\\6\\7\\8\\9\\A\\B\\C\\D\\E\\F%
228   \global\p=\lastpenalty}} % \p=1 if none of the characters exist
229 \def\oddline{\cr
230   \noalign{\nointerlineskip}
231   \multispan{19}\hrulefill&
232   \setbox0=\hbox{\lower 2.3pt\hbox{\hex{\h x}}}\smash{\box0}\cr
233   \noalign{\nointerlineskip}}
234 \newif\ifskipping
```

```
235 \def\evenline{\loop\skippingfalse
236   \ifnum\n<256 \m=\n \divide\m 16 \chardef\next=\m
237   \expandafter\setdigs\meaning\next \testrow
238   \ifnum\p=1 \skippingtrue \fi\fi
239   \ifskipping \global\advance\n 16 \repeat
240   \ifnum\n=256 \let\next=\endchart\else\let\next=\morechart\fi
241   \next}
242 \def\morechart{\cr\noalign{\hrule\penalty5000}
243   \chartline \oddline \m=\1 \advance\m 1 \xdef\1{\the\m}
244   \chartline \evenline}
245 \def\chartline{&\oct{\0\1x}&&\:&&\:&&\:&&\:&&\:&&\:&&\:&&}
246 \def\chartstrut{\lower4.5pt\vbox to14pt{}}
247 \def\table{$$\global\n=0
248   \halign to\hsize\bgroup
249     \chartstrut##\tabskip0pt plus10pt&
250     &\hfil##\hfil&\vrule##\cr
251     \lower6.5pt\null
252     &&&\oct0&&\oct1&&\oct2&&\oct3&&\oct4&&\oct5&&\oct6&&\oct7&\evenline}
253 \def\endchart{\cr\noalign{\hrule}
254   \raise11.5pt\null&&&\hex 8&&\hex 9&&\hex A&&\hex B&
255   &\hex C&&\hex D&&\hex E&&\hex F&\cr\egroup$$\par}
256 \def\:{\setbox0=\hbox{\noboundary\char\n\noboundary}%
257   \ifdim\ht0>7.5pt\reposition
258   \else\ifdim\dp0>2.5pt\reposition\fi\fi
259   \box0\global\advance\n 1 }
260 \def\reposition{\setbox0=\vbox{\kern2pt\box0}\dim=\dp0
261   \advance\dim 2pt \dp0=\dim}
262 \def\centerlargechars{
263   \def\reposition{\setbox0=\hbox{$\vcenter{\kern2pt\box0\kern2pt}$}}}

264 \def\text{{\advance\baselineskip-4pt
265 \setbox0=\hbox{abcdefghijklmnopqrstuvwxyz}
266 \ifdim\hsize>2\wd0
267   \ifdim 15pc>2\wd0 \hsize=15pc \else \hsize=2\wd0 \fi
268 \fi
269 On November 14, 1885, Senator \& Mrs.~Leland Stanford called together
270 at their San Francisco mansion the 24~prominent men who had been
271 chosen as the first trustees of The Leland Stanford Junior University.
272 They handed to the board the Founding Grant of the University, which
273 they had executed three days before. This document---with various
274 amendments, legislative acts, and court decrees---remains as the
275 University's charter.  In bold, sweeping language it stipulates that
276 the objectives of the University are ``to qualify students for
277 personal success and direct usefulness in life; and to promote the
278 publick welfare by exercising an influence in behalf of humanity and
279 civilization, teaching the blessings of liberty regulated by law, and
280 inculcating love and reverence for the great principles of government
281 as derived from the inalienable rights of man to life, liberty, and
282 the pursuit of happiness.'' \moretext
283 (!`THE DAZED BROWN FOX QUICKLY GAVE 12345--67890 JUMPS!)\par}}
284 \def\moretext{?`But aren't Kafka's Schlo\ss{} and \AE sop's
285 \OE uvres often na\"\i ve vis-\`a-vis the d\ae monic ph\oe nix's
286 official r\^ole in fluffy souffl\'es? }
287 \def\omitaccents{\let\moretext=\relax}
288
```

```
289 \def\sample{\table\text}
```

```
290 \def\bye{\end{document}}
```

The redefinition of `\typeout` around the `\begin{document}` prevents LaTeX from reporting that there is no `.aux` file. This is a bad hack, I agree :-)

```
291 \let\oldtypeout\typeout
292 \def\typeout#1{}
```

And another bad hack: to be able to load an encoding definition file after `\begin{document}` I disable the preamble only setting.

```
293 \makeatletter
294 \let\@preamblecmds\@empty
295 \makeatother
296
297 \begin{document}
298 \let\typeout\oldtypeout
299
300 \ifx\noinit!\else\init\fi
301 ⟨/code⟩
```