

The program `nfssfont`

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

1 Introduction

Within the NFSS distribution there is a L^AT_EX 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 L^AT_EX 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 T_EX, 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 L^AT_EX 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}
44
45 \def\init{%
46   \typein[\currfontname]%
47   {Input external font name, e.g., cmr10~J%
48     (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

```

Then select the font and assign it to `\currfontname`.

```

103 \selectfont\edef\currfontname{\fontname\font}%
104 \fi
105 \startfont

```

Finally we ask for some “action” and offer `\table\bye` as default—basically I got tired of having to type that in each time. If some other action is given you end with a `*` prompt and have to finish the run with `\bye` yourself eventually.

```

106 \typein[\action]{Now type a test command or
107   \string\help\space for help [ \string\table\space\string\bye\space]:}%
108 \ifx\action\empty
109   \expandafter\table\expandafter\bye
110 \fi
111 }

```

```

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

122 {\catcode'\|=0 \catcode'\=\other
123 |gdef|help{|message{%
124 |init switches to another font;^^J%
125 |stop or \bye finishes the run;^^J%
126 |table prints the font layout in tabular format;^^J%

```

```

127 \text prints a sample text, assuming TeX text font conventions;^^J%
128 \sample combines \table and \text;^^J%
129 \mixture mixes a background character with a series of others;^^J%
130 \alternation interleaves a background character with a series;^^J%
131 \alphabet prints all lowercase letters within a given background;^^J%
132 \ALPHABET prints all uppercase letters within a given background;^^J%
133 \series prints a series of letters within a given background;^^J%
134 \lowers prints a comprehensive test of lowercase;^^J%
135 \uppers prints a comprehensive test of uppercase;^^J%
136 \digits prints a comprehensive test of numerals;^^J%
137 \math prints a comprehensive test of TeX math italic;^^J%
138 \names prints a text that mixes upper and lower case;^^J%
139 \punct prints a punctuation test;^^J%
140 \bigtest combines many of the above routines;^^J%
141 \help repeats this message;^^J%
142 and you can use ordinary TeX commands (e.g., to \input a file).}}
143
144 \def\setbaselineskip{\setbox0=\hbox{\n=0
145 \loop\char\n \ifnum \n<255 \advance\n 1 \repeat}
146 \baselineskip=6pt \advance\baselineskip\ht0 \advance\baselineskip\dp0 }
147 \def\setchar#1{\escapechar-1\message{\string#1 character =}%
148 \def\do##1{\catcode'\##1=\other}\dospecials
149 \read-1 to\next
150 \expandafter\finsetchar\next\next#1}}
151 \def\finsetchar#1#2\next#3{\global\chardef#3='#1
152 \ifnum #3='\# \global\chardef#3=#2 \fi}
153 \def\promptthree{\setchar\background
154 \setchar\starting \setchar\ending}
155
156 \def\mixture{\promptthree \domix\mixpattern}
157 \def\alternation{\promptthree \domix\altpattern}
158 \def\mixpattern{\0\1\0\0\1\1\0\0\0\1\1\1\0\1}
159 \def\altpattern{\0\1\0\1\0\1\0\1\0\1\0\1\0\1\0\1}
160 \def\domix#1{\par\chardef\0=\background \n=\starting
161 \loop \chardef\1=\n #1\endgraf
162 \ifnum \n<\ending \advance\n 1 \repeat}
163
164 \def\!\{\discretionary{\background}{\background}{\background}}
165 \def\series{\promptthree \!\doseries\starting\ending\par}
166 \def\doseries#1#2{\n=#1\loop\char\n\!\ifnum\n<#2\advance\n 1 \repeat}
167 \def\complower{\!\doseries{'a}{'z}\doseries{'31}{'34}\par}
168 \def\compupper{\!\doseries{'A}{'Z}\doseries{'35}{'37}\par}
169 \def\compdigs{\!\doseries{'0}{'9}\par}
170 \def\alphabet{\setchar\background\complower}
171 \def\ALPHABET{\setchar\background\compupper}
172
173 \def\lowers{\docomprehensive\complower{'a}{'z}{'31}{'34}}
174 \def\uppers{\docomprehensive\compupper{'A}{'Z}{'35}{'37}}
175 \def\digits{\docomprehensive\compdigs{'0}{'4}{'5}{'9}}
176 \def\docomprehensive#1#2#3#4#5{\par\chardef\background=#2
177 \loop{#1} \ifnum\background<#3\m=\background\advance\m 1
178 \chardef\background=\m \repeat \chardef\background=#4
179 \loop{#1} \ifnum\background<#5\m=\background\advance\m 1
180 \chardef\background=\m \repeat}

```

```

181 \def\names{ {\AA}ngel\aa\ Beatrice Claire
182   Diana \'Erica Fran\c{c}oise Ginette H\'el\'ene Iris
183   Jackie K\=aren {\L}au\ra Mar{\'\i}a N\H{a}ta{\l}{\u\i}e {\O}ctave
184   Pauline Qu\^eneau Roxanne Sabine T\~a{\'\j}a Ur\v{s}ula
185   Vivian Wendy Xanthippe Yv{\o}nne Z"azilie\par}
186 \def\punct{\par\dopunct{min}\dopunct{pig}\dopunct{hid}
187   \dopunct{HIE}\dopunct{TIP}\dopunct{fluff}
188   \$1,234.56 + 7/8 = 9\% @ \#0\par}
189 \def\dopunct#1{#1,\ #1:\ #1;\ ' #1' \ ?' #1? \ !' #1! \ ( #1) \ [ #1] \
190   #1* \ #1.\par}
191
192 \def\bigtest{\sample
193   hamburgefonstiv HAMBURGEFONSTIV\par
194   \names \punct \lowercase \uppers \digits}
195
196 \def\math{\textfont1=\testfont \skewchar\testfont=\skewtrial
197   \mathchardef\Gamma="100 \mathchardef\Delta="101
198   \mathchardef\Theta="102 \mathchardef\Lambda="103 \mathchardef\Xi="104
199   \mathchardef\Pi="105 \mathchardef\Sigma="106 \mathchardef\Upsilon="107
200   \mathchardef\Phi="108 \mathchardef\Psi="109 \mathchardef\Omega="10A
201   \def\ii{i} \def\jj{j}
202   \def\##1{|\##1|+}\mathtrial
203   \def\##1{##1_2+}\mathtrial
204   \def\##1{##1^2+}\mathtrial
205   \def\##1{##1/2+}\mathtrial
206   \def\##1{2/##1+}\mathtrial
207   \def\##1{##1,{+}}\mathtrial
208   \def\##1{d##1+}\mathtrial
209   \let\ii=\imath \let\jj=\jmath \def\##1{\hat##1+}\mathtrial}
210 \newcount\skewtrial \skewtrial='177
211 \def\mathtrial{\$\AA \B \C \D \E \F \G \H \I \J \K \L \M \N
212   \O \P \Q \R \S \T \U \V \W \X \Y \Z \a \b \c \d \e \f
213   \g \h \i \j \k \l \m \n \o \p \q \r \s \t \u \v \w
214   \x \y \z \alpha \beta \gamma \delta \epsilon \zeta
215   \eta \theta \iota \kappa \lambda \mu \nu \xi \pi
216   \rho \sigma \tau \upsilon \phi \chi \psi \omega
217   \vartheta \varpi \varphi \Gamma \Delta \Theta \Lambda
218   \Xi \Pi \Sigma \Upsilon \Phi \Psi \Omega \partial
219   \ell \wp\par}
220 \def\mathsy{\begingroup\skewtrial='060 % for math symbol font tests
221   \def\mathtrial{\$\AA \B \C \D \E \F \G \H \I \J \K \L
222     \M \N \O \P \Q \R \S \T \U \V \W \X \Y \Z\par}
223   \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.

```

224 \def\oct#1{\hbox{\fontencoding{OT1}\rmfamily\'}\kern-.2em\itshape
225   #1/\kern.05em}% octal constant
226 \def\hex#1{\hbox{\fontencoding{OT1}\rmfamily
227   \H}\ttfamily#1}% hexadecimal constant
228 \def\setdigs#1"#2{\gdef\h{#2}% \h=hex prefix; \O\l=corresponding octal
229   \m=\n \divide\m by 64 \xdef\O{\the\m}%
230   \multiply\m by-64 \advance\m by\l \divide\m by 8 \xdef\l{\the\m}}
231 \def\testrow{\setbox0=\hbox{\penalty 1\def\{\char"\h}%

```

```

232 \0\1\2\3\4\5\6\7\8\9\A\B\C\D\E\F%
233 \global\p=\lastpenalty}} % \p=1 if none of the characters exist
234 \def\odddline{\cr
235   \noalign{\nointerlineskip}
236   \multispan{19}\hrulefill&
237   \setbox0=\hbox{\lower 2.3pt\hbox{\hex{\h x}}}\smash{\box0}\cr
238   \noalign{\nointerlineskip}}
239 \newif\ifskipping
240 \def\evenline{\loop\skippingfalse
241   \ifnum\n<256 \m=\n \divide\m 16 \chardef\next=\m
242   \expandafter\setdigs\meaning\next \testrow
243   \ifnum\p=1 \skippingtrue \fi\fi
244   \ifskipping \global\advance\n 16 \repeat
245   \ifnum\n=256 \let\next=\endchart\else\let\next=\morechart\fi
246   \next}
247 \def\morechart{\cr\noalign{\hrule\penalty5000}
248   \chartline \odddline \m=\1 \advance\m 1 \xdef\l1{\the\m}
249   \chartline \evenline}
250 \def\chartline{&\oct{\0\1x}&&:\&&:\&&:\&&:\&&:\&&:\&&:\&&}
251 \def\chartstrut{\lower4.5pt\vbox to14pt{}}
252 \def\tablen{$$\global\n=0
253   \halign to\hsize\bgroup
254     \chartstrut##\tabskip0pt plus10pt&
255     &\hfil##\hfil&\vrule##\cr
256     \lower6.5pt>null
257     &&&\oct0&&\oct1&&\oct2&&\oct3&&\oct4&&\oct5&&\oct6&&\oct7&\evenline}
258 \def\endchart{\cr\noalign{\hrule}
259   \raise11.5pt>null&&&\hex 8&&\hex 9&&\hex A&&\hex B&
260   &\hex C&&\hex D&&\hex E&&\hex F&\cr\egroup$$\par}
261 \def\: {\setbox0=\hbox{\noboundary\char\n\noboundary}%
262   \ifdim\ht0>7.5pt\reposition
263   \else\ifdim\dp0>2.5pt\reposition\fi\fi
264   \box0\global\advance\n 1 }
265 \def\reposition{\setbox0=\vbox{\kern2pt\box0}\dim=\dp0
266   \advance\dim 2pt \dp0=\dim}
267 \def\centerlargechars{
268   \def\reposition{\setbox0=\hbox{\$ \vcenter{\kern2pt\box0\kern2pt}$}}}}
269 \def\text{{\advance\baselineskip-4pt
270 \setbox0=\hbox{abcdefghijklmnopqrstuvwxyz}
271 \ifdim\hsize>2\wd0
272   \ifdim 15pc>2\wd0 \hsize=15pc \else \hsize=2\wd0 \fi
273 \fi
274 On November 14, 1885, Senator & Mrs.~Leland Stanford called together
275 at their San Francisco mansion the 24~prominent men who had been
276 chosen as the first trustees of The Leland Stanford Junior University.
277 They handed to the board the Founding Grant of the University, which
278 they had executed three days before. This document---with various
279 amendments, legislative acts, and court decrees---remains as the
280 University's charter. In bold, sweeping language it stipulates that
281 the objectives of the University are "to qualify students for
282 personal success and direct usefulness in life; and to promote the
283 public welfare by exercising an influence in behalf of humanity and
284 civilization, teaching the blessings of liberty regulated by law, and
285 inculcating love and reverence for the great principles of government
```

```

286 as derived from the inalienable rights of man to life, liberty, and
287 the pursuit of happiness.' ' \moretext
288 (!'THE DAZED BROWN FOX QUICKLY GAVE 12345--67890 JUMPS!)\par}}
289 \def\moretext{?'But aren't Kafka's Schlo\ss{} and \AE sop's
290 \OE uvres often na"\i ve vis-\a-vis the d\ae monic ph\oe nix's
291 official r\ole in fluffy souffl'es? }
292 \def\omitaccents{\let\moretext=\relax}
293
294 \def\sample{\table\text}
295 \def\bye{\end{document}}

```

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

```

296 \let\oldtypeout\typeout
297 \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.

```

298 \makeatletter
299 \let\@preamblecmds\@empty
300 \makeatother
301
302 \begin{document}
303 \let\typeout\oldtypeout
304
305 \ifx\noinit!\else\expandafter\init\fi
306 \end{code}

```