Making virtual fonts with Jirí Zlatuška's 'Accents' program

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1 June 1993

1 What does the accents program do?

The accents program by Jirí Zlatuška converts a traditional 128-character tfm file (such as cmr10.tfm) into a 256-character virtual font, say vcmr10.vf, together with the associated tfm file vcmr10.tfm. This virtual font contains the original font in the first 128 places, and accented characters in some of the later places. It can also contain other characters defined in an auxiliary file.

Thus accents should allow existing TEX fonts to be converted easily to a form similar to, and perhaps interchangeable with, the new DC fonts.

2 Why use extended fonts?

The principal advantage of representing an accented character, say 'é', as a single character in a font—whether by DC fonts or virtual fonts—is that it greatly simplifies hyphenation.

It may also assist in the 'alphabetical' ordering of indexes and similar lists.

3 Virtual fonts versus DC fonts

A virtual font does not contain the actual bit-maps of the glyphs; rather, it points to fonts containing these bit-maps. Thus the bit-maps for the virtual font vcmr10 would take approximately half the space used by the corresponding DC font dcr10. (We are talking here of the PK fonts used by the output driver.)

It should also be easier to modify the position of accents in virtual fonts. The program vftovp converts the font x.vf to the text form x.vp in so-called vpl format. This file is readily edited, and can then be reconverted with vptovf.

Against this, relatively few drivers presently support virtual fonts. (One that does is `dvips`.) Presumably this lack will be remedied in the reasonably near future.

4 A practical example

We convert the `cmr10` font to virtual form with the command

```
accents cmr10.tfm vcmr10.vf vcmr10.tfm
```

Or, if you want more information about what is going on,

```
accents -verbose cmr10.tfm vcmr10.vf vcmr10.tfm
```

Now put `vcmr10.vf` in the place where dvips expects to find it. (On my system the current directory is specified in both the `VFFONTS` and the `TEXFONTS` path-lists, so there is nothing to do.)

As a test, give the command `tex testfont`, giving `vcmr10` as the font when requested:

```
tex testfont
Name of the font to test > vcmr10 scaled 1200
*\table
*quit
```

Finally, run `testfont.dvi` through `dvips` for a printed table of the extended font.

```
dvips testfont
```

5 Compiling `accents` under Unix

I retrieved Zlatuška's `accents.web` by anonymous FTP from `ftp.tex.ac.uk` in the directory `pub/archive/support/accents`. So far as I am aware, the only change file provided with the `accents` program is Zlatuška's Pascal change file `accents.chg`, intended for use with Turbo-Pascal.

However, most of the code in `accents.web` is taken from the standard TeX programs `vftovp` and `vptovf`. (These are part of the standard TeX distribution, available eg from Karl Berry's archive at `ftp.cs.umb.edu` in the files `/pub/web.tar.z` and `/pub/web2c.tar.z`.)

It is simple therefore to compile `accents` as part of the UnixTeX system, using `web2c` and the UnixTeX library. I have written a `web2c` change file, `accents.ch`, for this purpose. It may be found at `ftp.maths.tcd.ie` as `pub/TeX/accents/accents.ch` or `/src/TeX/web2c-5.851d/accents/accents.ch`.

The Makefile in either directory assumes that the accents directory is just below the main TEX software directory, parallel to web, fontutil, etc. But it is easy to see how to modify the Makefile if this is not the case.

In principle you now say make (in the accents subdirectory) and the program should be compiled.

Note that the path-lists for VFFONTS, etc, where accents looks for virtual fonts, are taken from the UnixTeX library lib.a. If you want to change these, you should go back to the main TeX source directory, modify the Makefile (where these paths are specified in the most recent UnixTeX) and recompile the library.

Or you can overrule these path-lists by setting appropriate enviroment variables (with set or setenv). For details see the tex manual entry.

6 Compiling accents on the Macintosh

I'm actually running accents on the Macintosh, where it was compiled with web2c under Think C v5. The application may be found at ftp.maths.tcd.ie as pub/Mac/TeX/accents.sit.hqx.

The UnixTeX change file accents.ch described above is actually the change file for the Macintosh, with irrelevant changes commented out.

7 Zlatuška's coding

Zlatuška outputs the KOI8-CS encoding in this version of accent; but as he says, it is easy enough to change the coding if desired. I assume that the 'Cork encoding' is now the TEX standard, but I am not an expert in TEX coding theory.

Here is a part of the coding in accents.web.

```
dc8(A)(@'200)(breve_accent)(@'201)(ogonek)(@'300)(grave_accent)
(@'301)(acute_accent)(@'302)(circumflex)(@'303)(tilde)
(@'304)(umlaut)(@'305)(circle_accent)@/
dc3(C)(@'202)(acute_accent)(@'203)(hachek)
(@'307)(cedilla_accent)@/
```

This means (I think!) that character with octal code 0200 is 'A' with a breve-accent (whatever that is); character 0201 is 'A' with an ogonek, character 0300 is 'A' with a grave accent, character 0301 is 'A' with an acute accent, and so on

It would of course be easy to modify this coding through the change file.

Incidentally, we have been assuming so far that the input file (cmr10 in the example below) follows the TEX encoding. But the program is equally well able to deal with Adobe encoding (which it recognises from the header) and converting this into a virtual font with TEX encoding.

The input or output codings can also be specified in the (optional) auxiliary file.