Some notes about TEX and MS-Windows

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Abstract

Many people know about TEX compilers and TEX utilities for the MS-DOS PC. However, in the world of WINDOWS there is a lack of knowledge. This note is intended to inform people who like to run TEX under WINDOWS and want all the good stuff that WINDOWS and TEX offers.

1 Introduction

I am a real DOS (4DOS) addict and in principle do not like to work under WINDOWS. I really detest the many mouse clicks one needs to get simple things done. Things that are done with one or two really simple 4DOS commands (e.g. file moving) need many mouse movements. Perhaps I am an old fashioned guy not realizing that the world is changing...

There are two application that make it worth while using WINDOWS. The first one is the multitasking environment of WINDOWS. Of course there are ordinary DOS programs (e.g. Quarterdeck Desqview) that do the same but a nice graphical environment with icons makes WINDOWS a real userfriendly multitasking environment. The second and most convincing advantage of WINDOWS is its graphical interface. There are many excellent graphical packages (e.g. Correldraw) that allows you the create, manipulate, convert and print all kind of graphics. So when talking graphics one really should work with WINDOWS.

People who work with TEX are all people who like to create texts of the highest quality. The greatest disadvantage (others would say advantage) of TEX is that it is not WYSIWYG (what you see is what you get). After the compilation of a TEX document we all want to use some kind of graphical interface to view (see) the results. So we are talking graphics. We also would like some kind of multitasking, even better a straight compilation and viewing of our TEX code while we are typing the text. This all should be possible with WINDOWS...

An operating system quite similar to WINDOWS for a PC is OS-2 (sorry but OS-2 is much better than WINDOWS). For OS-2 there are several excellent TEX programs and utilities. For example EMTEX (absolutely free of charge!) and ASTEX (see MAPS 93.1 page 41). These programs all have the multitasking and excellent graphical display as mentioned above. People who really like to use some kind of TEX for WINDOWS will find out that there is no such thing yet. There is a commercial package Scientific word wich claims to be a TEX à la WYSIWYG (see MAPS 92.2 page 147). It really looks promising but is not a real and complete TEX system for WINDOWS.

After reading this introduction the question arises 'what should we use under WINDOWS?'. The next sections will discuss some WINDOWS and TEX topics and hopes you to inform how one could set up a WINDOWSTEX system.

2 emTEX and Windows

When looking at TEX PC packages there is one that is state of the art: EMTEX. It is a pity that E. Mattes 'only' developed a MS-DOS and an OS-2 version. EMTEX is free of charge and is to my knowledge the best TEX PC package there is. It offers for the novice and advanced TEX user everything one wants. The only drawback to the system is that E. Mattes did not developed a userfriendly TEX shell. This is nowadays no real disadvantage because there are many good shells (of course I think the best is 4TEX, see the discussion about EMTEX shells elsewhere in this MAPS).

Our first attempt for a WINDOWSTEX should be a DOS-window running EMTEX. Many people who have tried got really disappointed. When running the 386 version of EMTEX under WINDOWS we get the error message 'DPMI not supported.' We can use the slower 8088 and 80186 versions of EMTEX but we want more... The errormessage 'DPMI not supported' is the result of E. Mattes own DOS-extender. Running TEX needs

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[*] I am not a WINDOWS specialist so don't be offended when I do stupid and clumsy things. This note is intended to inform people and stimulate them to write more about TEX and WINDOWS.

a lot of memory or diskswapping. When you have a 386 PC or higher with a lot of memory (the manuals suggest 3Mb) the DOS-extender will claim all available memory and use this instead of the slow diskswapping. The DOS-extender will also use the fast 32-bits processor optimally and gain a lot of speed. The second advantage of the 386 version of EMTEX is that it uses memory settings of the BiG-TEX and BiG-LATEX versions. This means that you can compile large documents with many references and labels.

There is nowadays a solution to the DOS-extender problem. Perhaps not the perfect solution but it works and I think in the near future will become idiot proof. Mattes wrote a program (`emxbind -x`) that deletes his own EMX DOS-extender from the `tex386.exe` and adds a small program (`emxl`) to `tex386.exe`. Now `tex386.exe` will by default look for Mattes own DOS-extender (`emx.exe`) on the DOS-path or will look in the environment variable EMX what DOS-extender to use. There are two possible memory-extenders you can use

1. The DOS-extender `emx.exe` (version 0.8f), i.e. E. Mattes own DOS-extender. This will only work under DOS and not under WINDOWS. To use this DOS-extender set the environment variable EMX to
   `SET EMX=C:\EMTEX\COMPILER\EMX.EXE`
2. The DPMI-extender `rsx.exe` (version alpha 0.51) written by R. Schnitker. This will only work under WINDOWS and not under DOS. To use this DOS-extender set the environment variable EMX to
   `SET EMX=C:\EMTEX\COMPILER\RSX.EXE`

So, simply by updating your `tex386.exe` and adding two memory-extenders to your EMTEX system you now can use EMTEX under DOS as well as under WINDOWS. The DPMI-extender is still in a testing phase (an alpha release), so there could be some bugs. Indeed some bugs are already documented and will be solved in the near future. I have noticed that after running EMTEX under WINDOWS my log file as well as my dvi file and several others became read-only. No serious problem because with a simple DOS statement these files are no longer read-only (i.e. `attrib -r *.dvi *.log`). A simple batch file solves these inconveniences. All the testing I did under WINDOWS didnot result in crashes or strange error massages. The errormessages that appeared were all the result of the know bug that some files appear to be read-only after `rsx` has opened them. All these errors are easily corrected.

The conclusion of this section is that people who want a TEX for WINDOWS, should consider to upgrade/install the EMTEX system.

3 WinTEX version 1.0

WINTEX is a text editor for WINDOWS specialy written for the use with TEX and LATEX. It is written by S. Morin and helps you with all the difficulties of writing documents in LATEX. WINTEX is shareware and

only costs \$25,-. Not only the 'normal' editing facilities are supported but also some 'tool bars' and 'dialog boxes'.

There are three TEX tool bars, i.e. a Text-bar, a Math-bar and a LATEX commands-bar. With the Text-bar you can easily and graphically select fontsize, font type and all kinds of accentuation. The Math-bar graphically displays all LATEX symbols and helps you selecting the correct statements for all math symbols. With the LATEX commands-bar one can select from a list of all LATEX commands. WINTEX also has some dialog boxes. There are dialog boxes for the mathematical array, the eqnarray environment, the tabular environment and the LATEX preamble. With dialog boxes the making of the above structures becomes easy.

When you open a new document, WINTEX gives you access to dialog boxes that will help you to build the preamble and the style options. With the main dialog box you choose the document style and associated options. Clicking on Page style, Math style or Floating bodies style buttons will open environment specific dialog boxes. Once selected, the options are inserted in the newly opened document.

I could not read many of my own LATEX documents and I really missed the powerful macro possibilities as for instance with Qedit (or TSE). My general conclusion is that the tool-bars and the dialog-boxes makes it really simple to type documents but that there need a lot to be done before WINTEX is a real text editor and TEX tool.

4 DVIwin version 2.7

The DVIwin driver is written by H. Sendoukas and lets you preview and print DVI files under MS-Windows 3.1. Its main advantages are: speed, compatibility with any raster device with a WINDOWS driver, and graphics capability. All screen and printer handling is done through WINDOWS, so it should work on any printer supported by the system. You can insert arbitrary graphics files produced by most WINDOWS applications, or other standard graphics files (e.g. TIFF, PCX, etc.) provided that you have the appropriate graphics filter. The EMTEX specials and the PostScript specials to include graphics, however, are not supported.

DVIWIN is easy to install and also reads fonts from EMTEX fontlibrary files (`.fli` files in the directory `c:\emtex\texfonts`). The font-substitution looks much like the one used by EMTEX. There only difference is that DVIWIN does not allow wildcard characters (e.g. `cm*  150 -> cm*  300` is not allowed).

I really like DVIWIN because every time you switch to DVIWIN, it checks if the dvi-file that is currently displayed is updated. If updated it will load the new dvi-file and position at the same position (page) as the old dvi-file. This makes it really simple to perform the edit-compile-view cycle.

My general conclusion is that DVIwin is an excellent dvi-viewer and printer for Windows. I think it will be only a question of time or all emTEX possibilities that are not available yet in DVIwin (e.g. automatic fontgeneration, specials) can be used with DVIwin.

5   A TEX for Windows system

In this section I will explain what I have installed under Windows and how I use Windows to produce TEX documents.

First I updated the emTEX `tex386.exe` and added the two memory-extenders. These programs will be available on the 27 high density diskettes the NTG will distribute as the complete TEX distribution for the PC. I will also try to get them on all the CTAN servers.

The TEX shell I use is 4TEX. This user friendly menu system can be used to perform all (novice and advance) TEXing. 4TEX version 3.00 (promised to be released in november 1993) will be updated so that it can run every thing in a DOS-window when running Windows. The only thing one has to do is to open a new program group, i.e. select in the Program Manger the File and then New and Program group and type the new group name (e.g. TeX). After this you can install 4TEX as a new Program item and use `c:\emtex\btm\4tex.pif` as the Command line and use `c:\emtex\btm\4tex.ico` as the icon.

Of course I have installed WinTEX, DVIwin and some other TEX Windows utilities (e.g. `dvips`, `ghostscript` and `gnuplot` for Windows) as Program items in the same Program group. Now I have a complete TEX system for Windows.

One thing to remember when installing DVIwin is that the number of files in the `config.sys` should be at least 50 (due to font loading). Also one needs to copy the `*.dll` files from the directory where one installs WinTEX (e.g. `c:\emtex\win\`) to the window system directory (e.g. `c:\windows\system\`). The font substitution file `dviwin.sub` we need to adjust to our own (extra) fonts and then copy it to our font directory (`c:\emtex\texfonts\`). After installing DVIwin one has to start the program and adjust some Option settings. First we change the resolution to 300 dpi and then change the Option Font directory to `c:\emtex\btm\texfonts\$rdpi;c:\texfiles\fonts\$rdpi`. Now we are ready for action...

DVIwin also has two nice utilities. The program `clipmeta.exe` can be used to take a metafile or a bitmap file from the system clipboard and save it to a disk metafile. E.g. you can use `gnuplot` to make nice plots and then paste then to the clipboard and convert this with `clipmeta.exe` to a metafile. The program `wbr.exe` is a text file browser under Windows. It is for instance used in combination with DVIwin to display the log files.

When I use TEX I first start a 4TEX session and at the same time a DVIwin session. I use the menu of 4TEX for all TEXing and switch to DVIwin whenever I want to view and print the document. 4TEX has much to offer what is not yet available under windows (e.g. automatic fontgeneration and many other utilities).

The general conclusion is that in the world of Windows much is on the move. It will only be a matter of time and there will be a perfect TEX system for Windows. Especially the inclusion of all kinds of graphics and the mulitasking (even better real time display while typing) will be possible under Windows. Perhaps all this will not be possible under DOS 7.0.