

Typesetting on Personal Computers

Running T_EX on a 386-based computer: Twice as fast as an AT

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For the third year in a row, at about this same time, I find myself talking about running T_EX on the latest generation of personal computers. In each annual installment, the speed of the machines has doubled.

The 386-based machine I'm now using runs at 16 MHz, includes 640 K of real memory, 1 Mb of extended memory, and a 40 Mb hard disk, and costs about \$3,000, including a Hercules-compatible video card, and a monochrome display. Also included are two serial ports, two parallel ports (one on-board, the other on the video card), and sockets to accept either the 287 or the 387 math-coprocessor. The unit can handle up to 7 Mb of extended memory. The system comes with a one-year warranty.

The computer is made by the Fortron Corporation. To date, I've found their machines to be unusually reliable. (Disclosure Department: Fortron Corporation, in an effort to make compatibles easy-to-use for newcomers, is one of the companies that includes a copy of my book, *The Complete Computer Companion — Buying and Using Your First Personal Computer*, with every computer they sell, and they also sell the book separately.)

If speed is not a critical issue to you, the Fortron AT-class computers are well worth a look: they're about \$1,000 less than the 386 machine. They come with 384 K of extended memory, and one parallel port (the one that's on the mono-graphics video card). The version I tested was their 10 MHz/no wait-state model, using the "PAT" motherboard. This motherboard is of special interest: It's designed to fit in either their AT case, or a PC case, and it's compatible with PC components — this means that you can upgrade your PC-class computer to an AT-class machine by simply swapping motherboards. This approach is a much better solution than an accelerator card, and costs about the same.

On the 386 machine, T_EXing a 5-by-8 inch page, containing some embedded mathematics, takes under 2 seconds. It takes 220 seconds to compile

the WEB document `tangle.tex`—that works out to around 3 seconds per page (WEB documents are about as complex a typesetting job as you can get). On the 10 MHz/no wait-state model, it took 283 seconds to compile `tangle.tex`.

The 1 Mb of extended memory comes in handy: I use it as a RAM-disk, and copy all my commonly-used programs, including my editor (a specially-modified version of PC-Write), T_EX, its `plain.fmt` and `tex.poo` files, batch files, and the previewer, into this RAM-disk. (This is done automatically by the `autoexec.bat` file, whenever I turn on the computer.) By setting a path to the RAM-disk, I've eliminated the load time of these programs—they're up and running the instant I give the command. (In order for T_EX to find its `plain.fmt` and `tex.poo` files, you'll need a utility program that does the same thing for data files as `path` does for programs.)

If you use Personal T_EX's Cordata LP-300 driver (which requires RAM-disk space) on a highly-complex document, and you use your RAM-disk as explained above, you may find you don't have enough room left for the driver to run successfully. The solution is to set up the batch file you use to activate the print program as follows:

```
del e:\tex.exe
del e:\plain.fmt
pclaser %1 -L=c -R=e
if exist e:\park!@#.cor del e:\park!@#.cor
copy c:\pgms\tex.exe e:\
copy c:\pgms\plain.fmt e:\
```

This deletes the two largest files off the RAM-disk ('e:') and runs the print program. It then tests to see if the print program's temporary file is still present on the RAM-disk (this occurs if you've interrupted the print program); if this temporary file exists, it is deleted. Finally, the batch file copies the two large files back to the RAM-disk. Note that if you hit control-C to stop printing, you must give the batch file a moment to do the copying—if you're too impatient and hit control-C again, you'll break out of the batch file.

The computer is available with two styles of keyboards: the new enhanced style, with the function keys along the top edge, or the original AT-style, with the function keys on the left side of the keyboard. Unless you'll frequently be using other computers that have the enhanced keyboard, I'd recommend the original AT-style: it's easier to swing your hand to the left to get to the function keys, than it is to reach over the keys to get to the top of the keyboard. When it comes to the feel

of a keyboard, I still haven't found anything close to the hard-contact type of keyboard mentioned in a previous column, but the Maxi-Switch keyboard used by Fortron is a definite cut-above the pure-mush feel of most clone keyboards.

The 386 computer is hardware-compatible with the AT: it will take all of the same hard disks, keyboards, power supplies, etc., as a standard AT.

You can call Fortron at 408-432-1191, to ask for the name of your nearest dealer. If your local dealer can't match the prices I've listed, you can contact me for the names of some their dealers who can.

On choosing a hard disk

The performance of a hard disk is determined by two characteristics: its access time, and its transfer rate. The access time tells you the average time required for the hard disk to find the file you want. The transfer rate tells you how fast the information can be transferred, once it's found. The hard disk I'm using is a Seagate ST251. This is a reasonably reliable, inexpensive hard disk, with an access time of 40 milliseconds—a satisfactory, but not earth-shaking speed for an AT- or 386-class machine. T_EX, however, doesn't seem to care much about the access time of your hard disk: when I substituted a Priam hard disk, with its fast 28 ms access time, T_EX's performance remained the same. I found that the other programs I use were also pretty much indifferent to the Seagate's slower access time. But if you do a lot of data-base work, or use other programs that have to scavenge all over your hard disk to find information in non-sequential order, your best bet would be the more-expensive Priam drive. (Users of the Cordata LP-300 driver may also find that they can get away with using a hard disk with a fast access time, such as the Priam, instead of the required RAM-disk. In fact, even the 40 ms Seagate seems to work.)

Priam drives are available in 45 Mb, 60 Mb, and 130 Mb versions. They have a reputation for reliability (almost a contradiction-in-terms when it comes to hard disks), and I've found the company to be responsive.

If many of your applications are disk-intensive, you might want to investigate the newer hard-disk controllers. These new controllers offer faster transfer rates, but require drives compatible with their new standards: RLL and SCSI (pronounced "scuzzy").

Because T_EX accesses information on the hard disk in sequential order, I now work with a reduced number of buffers. My `config.sys` file contains the line `'buffers=17'`. This leaves a bit more room for RAM-resident programs.

Queries

Request for Contributions to a New Publication

The increasing use of Desktop Publishing Systems (DPSs) is leading to the widespread appearance of appalling pieces of "design", perpetrated by poor software and by people without adequate training (often through no fault of their own).

I am collecting examples of these excrescences both for my own use in a planned typographical design course and for publication in a sort of "Chamber of Horrors" book, if there are enough examples to make it really *bad*!

All contributions will be gratefully received and will be acknowledged in the publication (if it gets off the ground).

Please send examples to:
Peter Flynn
Computer Bureau
University College, Cork
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If they can be sent electronically, my addresses are:
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