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Site Reports

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CDC TEX

Michael J. Frisch
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I have decided to give up working on the Minnesota version of T_EX because the version running at the Regional EDP Center at the University of Aarhus (RECAU) in Denmark is much smaller and easier to change. Erik Bertelsen of RECAU has agreed to become the site coordinator for T_EX on CDC machines. His version of T_EX works quite well and is fully debugged. It runs in about 38K of memory and uses about 2 CP seconds per page on the RECAU Cyber 173. It is based on the May, 1980 version of Stanford T_EX but will be updated when T_EX 82 becomes available.

However, Erik's version of T_EX uses the RECAU Pascal library feature which is not a part of Pascal 6000 systems for CDC computers. Erik plans to revise his source code so that his version of T_EX can be compiled at other CDC sites. He has installed a binary version at Minnesota using temporary revisions.

Presently, device drivers are available at RECAU for daisy wheel printers of the Qume/Diablo/NEC type, for the Compugraphics Unisetter typesetter, for Tektronix 4014 terminals emulating the Unisetter using the DISSPLA graphics package from ISSCO, and for any other devices that use DISSPLA's software defined characters. At Minnesota, I have been working on a Varian 200 dot per inch plotter driver and I plan to revise it to work with Erik's T_EX.

There are some minimal requirements for being able to install the source of Erik's revised T_EX. The Pascal compiler is needed, of course. The CDC UPDATE utility must be at least at correction level 528 because Erik's T_EX uses the long input lines and 8-in-12 ASCII character set features of UPDATE. Note that a more recent version of UPDATE will probably be required since bugs in level 528 can sometimes prevent installation of T_EX. Because of the different character sets, CDC users must also have a way to read and print 8-in-12 files if they work with the source code of Erik's T_EX. This is easily done in the NOS operating system at correction level 509 and above, or else the Pascal COPYCH utility can be used.

Erik has written several programs that simplify the creation of font information files for the various devices that can be used with T_EX. He has added the Stanford TFX files for 200 per dot inch plotters to his library of fonts so that the Minnesota plotter driver can be used when completed. Users of devices other than the ones mentioned above must create their own font information files and must write device drivers. Erik's code provides good examples for commonly-used devices.

CDC sites interested in the RECAU version of T_EX should contact Erik for details about distribution. His address and phone/Telex are:

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HP3000 SITE REPORT

Lance Carnes

Just this month the number of HP3000 T_EX users has doubled—a copy has been installed at another HP3000 site. After the upcoming HP3000 International Users Meeting in San Antonio, where I will be conducting demonstrations and in general promoting T_EX, there should be more users.

This implementation is still rather slow. It consumes 5 to 10 cpu seconds, and 20 to 30 elapsed seconds, per page of output. However, a T_EX run may be submitted to a batch job, which will execute in background while foreground users are editing, compiling or eating lunch. In this way the user may avoid waiting for long periods of time in front of his or her terminal, only to find that “! You can't do that in restricted horizontal mode”, or whatever.

(Slow is relative, however. Last week while working at Stanford I was able to compile 6 pages in 4 hours. The SAIL machine was in poor health and would die midway through an edit or T_EX compile, and stay down for 20 to 30 minutes. Give me a slow machine that keeps running any day!)

There is hope for speeding up this implementation, though. All I need is some time to study where the bottlenecks are and optimize around them. Unfortunately, I do not currently earn my

living by computerized typesetting, nor do I have a sponsor for my \TeX exploits. Time must be stolen from my evenings and weekends to apply the necessary touches to this implementation.

The Hewlett-Packard Boise Division is hard at work on a device driver for the HP2680 Laser Printer. At a resolution of 180 dots/inch this will provide a useful device for printing training manuals, technical documentation and other similar materials.

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\TeX AT UNIVERSITY OF MILAN

G. Canzii
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Since November 1981, PASCAL \TeX runs successfully on IBM computer, series 3032, under MVS operating system in a batch environment. Output is on VERSATEC printer-plotter off-line. \TeX has been compiled by "PASCAL 8000" release 2. The \TeX release was received from Stanford University through I. Zabala on October 1980, using TFX.

The following transport problems have been fixed:

- "PASCAL 8000" does not accept more than one second level EXTERNAL procedure, therefore all SYSDEP routines were loaded respectively in "TEXPRE" and "TEX".
- To pass the compilation under "PASCAL 8000" intervention on syntax of some statement was required.
- \TeX works with ASCII characters while IBM 3032 with EBCDIC code and therefore we inserted two routines "EBCDICTOASCII" and "ASCIITOEBCDIC" to obtain I/O activity on our system.
- Run-time dynamic allocation of files is not allowed under MVS operating system. Consequently, and to optimize portability, we decided for static allocation of data sets. To do that, it was necessary to implement two procedures:
 - a) an initialization procedure that loads all file-names;
 - b) a procedure that, reading the font-names supplied by the user, opens the corresponding file.
- "DRIVER" program for VERSATEC device has been rewritten.

The following problems have been met in the "preprocessor" and "processor" modules.

Since SYSDEP was split, our discussion includes it. "TEXPRE" required these modifications:

- 1) "PASCAL 8000" does not initialize variables, consequently the "Procedure INITPROCEDURE" is called, as first, at the beginning of module.
- 2) We have written the "Procedure REFRESH" that initializes those variables not present in "INITPROCEDURE".
- 3) All files have been declared as text-files.
- 4) In the "Procedure GETNEXT" we have added the global variable "FONTE", to store the font-name supplied by the user.

"TEX" required the following modifications:

- 1) The same intervention already listed at points (1), (2) and (3) for "TEXPRE".
- 2) "PASCAL 8000" generates real numbers only in double precision (2 words). It was necessary to reformat "TBLFIL" file that now contains variable length records. Consequently, routines to access this file in read/write have been changed.
- 3) Differing from Stanford, in our version the basic fonts have been pre-defined in the preprocessor module. Therefore, the "Procedure DEFINEFONT" stores font information exclusively in the static portion of \TeX memory. We have written the "Procedure SPACE" to load into dynamic portion of memory the space values for every font.
- 4) In the "HYPHENATIONWORD", besides existing initializations, we provided "TRUNCWORD (.0.):=0" in "LEXICALORDER".

As future plans, we want to implement following modules:

- a) a procedure to obtain automatic syllabic division for Italian language;
- b) output driver for interfacing graphic terminal, model "TEKTRONIX 4014".

As soon as possible this version of \TeX on IBM machines should be available for distribution followed by a detailed documentation. For information, contact:

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Thanks are due to the Stanford group for suggestions, to Prof. Giovanni Degli Antoni for his support, and to Communication and Programming Project (between Honeywell Information Systems Italia and University of Milan-Institute of Cybernetics) for sponsoring our activity.

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T_EX-news from Pisa

by

L. Aiello
IEL, CNR

S. Pavan
ISI, University

This is an example of our T_EX-output

T_EX runs in Pisa in PASCAL-VS on the IBM 370/3033 of CNUCE (an Institute of the National Research Council) under VM/CMS. At CNUCE we have had access to a graphic station consisting of two screens: an alphanumeric IBM 3277 and a high resolution display TEKTRONIX 819, interconnected via the Display Graphic Attachement RPQ 7H0284. We have also had access to a VERSATEC, a (not very) high-resolution (160 pixels per inch) electrostatic printer. Drivers have been implemented both to output T_EX-DVI files on the TEKTRONIX and on the VERSATEC. Hence, the markup file is displayed and edited on the IBM 3277, while the formatted pages (or parts thereof) are shown on the TEKTRONIX. Hardcopies of the final documents are produced on the VERSATEC.

T_EX seems fully tuned up: in the last couple of months, no bug has been reported by the (still small) T_EX-user community. We have already produced some documents (letters, a thesis, few technical papers) and they "look good". We have developed some software around T_EX, part in the form of T_EX-macros, some in the form of PASCAL extensions. A source of inspiration in the development of our software has been SCRIBE. In particular, we have taken from SCRIBE the idea of "type of document".

We have designed and implemented a Preprocessor for T_EX that knows about a library of types of documents and can access a data base of bibliographic entries. The user, by simply invoking one of the predefined types, is guided in the composition of his document and is allowed to ignore all of the low level formatting commands. Among other things, the numbering of chapters, sections, subsections is performed automatically, as well as the construction of the table of contents, index and bibliography, provided the type of document contains such components.

In order to allow the Preprocessor to build the bibliography automatically we have designed and implemented an Editor. It is a simple data base

management system. It is guided by the structure of a type of bibliographic entry and facilitates the construction of the bibliographic data base in the form accepted by the Preprocessor.

Our software is somehow documented but, for the moment, in Italian.

In developing our software we have always had portability in mind, from two view points:

- 1) The Preprocessor and the Editor are written in PASCAL-VS; they are portable to other installations of \TeX in PASCAL-VS.
- 2) The output of the Preprocessor is a legal \TeX -input file; our \TeX -able documents may be compiled by other \TeX installations.

The reactions of the first users in Pisa is satisfactory. We are still very unhappy about the hardware we have: we hope to get soon a better printer.

Various people, besides us, have contributed at various stages of the \TeX project in Pisa: G. Attardi, M. Cupidi, D. Dariol, P. Falsini, G. Prini. Dariol and Falsini made the installation happen, Aiello and Pavan took care of the Preprocessor and Editor.

VAX/VMS SITE REPORT

Monte C. Nichols

The users of \TeX on VAX/VMS will be pleased to hear of the progress being made on their behalf, mostly through the courtesy and hard work of John Blair - Calma, Christopher Day - Lawrence Berkeley Laboratory, and David Kellerman - Oregon Software. Needless to say, none of this would have been possible without the initial work done by Barry Smith - Oregon Software, who has gone off on a well deserved sabbatical. To all these hard working guys—THANKS!!!

So what has happened you might ask? Well, while we are all anxiously waiting for \TeX 82 to become available, the aforementioned hard workers have been busy improving \TeX as it exists on VAX/VMS. Most of the bugs have been fixed in the old version—which up to now has been \TeX -Pascal as it existed in November 1980. In addition, they have added many features which make \TeX a more usable VAX package. Such things as batch mode operation, logical directory names, ability to run \TeX from any disk, and to have more than one \TeX user on the system at any given time are some of the things that have been added. The Versatec spooler has also been modified several times and can now even be called upon to put out a discrete range of pages as output rather than always printing the entire document.

As if this weren't enough, David Kellerman is presently working on bringing up the most recent Stanford version of \TeX -Pascal. This will of course be the version having magnification capability, etc. The new version should also get rid of the last few remaining bugs and keep the VAX/VMS community running in a superior fashion until \TeX 82 becomes available. David indicates this will be available by the time this issue of TUGboat reaches you. For those of you new to TUG, Oregon Software has volunteered to distribute \TeX for the VAX/VMS community. For \$50 they will send you a tape with all the VAX/ \TeX related files on it. See TUGboat Vol. 2 No. 2 for further information.

Both Chris and John have gotten WEB, TANGLE and WEAVE running on the VAX/VMS system, so we are in good shape to begin \TeX 82 as soon as it becomes available.

Finally, I have not sent out any special mailing to the VAX/VMS community as I discussed in an earlier site report. A number of folks have pointed out that news worth sending to those of us in the VMS community is probably of interest to other \TeX users as well, and is best published in TUGboat. I would encourage anyone who has items of interest

to submit them to TUGboat or to get in touch with me and I will mention them in the next VMS site report.

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"small" \TeX

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Send submissions to:

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This new column, dubbed *small* \TeX by Barbara Beeton, will cover any implementations of \TeX on small machines, whether actually in place or planned for the future. If you have already or are thinking of bringing up \TeX on any machine smaller than a VAX or a DEC10, write and let us know what you are up to.

What is meant by a small machine? An HP3000 is not usually considered a small machine, although when I tried to bring up \TeX -in-Pascal on it, it suddenly became small. A rule of thumb might be: if the address space of the machine is less than 20 bits, and it takes more than a Pascal compile to get \TeX running, and your operating system does not support virtual memory, you have a *small* machine.

The current offerings in the small machine arena are:

- Onyx (Z8002-based system). See TUGboat Vol. 2 No. 2 "TeX on Small Machines", by Harris and McClure.
This is not a \TeX -in-Pascal implementation, but a rewrite in C under UNIX.
- HP3000 (16-bit minicomputer). See TUGboat Vol. 2 No. 3 "Hewlett-Packard HP3000 Site Report", by Lance Carnes.
This is a \TeX -in-Pascal implementation, using software-implemented virtual memory.

If any small machine implementations have been omitted, please accept my apologies, and let us know the details.

Rumor. (You shouldn't be reading this—you know how unreliable rumors are!) A well-known member of the original \TeX team down on the Farm has indicated interest in bringing up a version on the M68000. Exactly when this will occur was not revealed by my source.