The Z-Letter

Number 4 August 1989

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WELCOME

Welcome to *The Z-Letter*, a newsletter for the community of CP/M and Z-system users. Everything in this issue is copyright © 1989 Alpha Systems Corporation, 711 Chatsworth Place, San Jose, California 95128, phone number (408) 297-5594. Publisher: Joseph W. Wright, c/o Alpha Systems Corporation. Editor: David A.J. McGlone, 720 S. Second Street, San Jose, California 95112.

The purpose of this magazine is to spread the news about new developments in the community, and to help newcomers get the most out of their machines. So send us the news about your new software or hardware, your opinion of someone else's product, that article you've been meaning to write, your praise, gripes, or just plain questions! This is the place.

Submitting material for publication

Material may be submitted on 5¼" diskette in almost any format, on 8" diskette, or printed or typewritten on clean white unlined paper. Mail letters, articles, and news to the editor, address above. The deadline for submission of material is one full week before the end of the month. We cannot pay for articles, but for every article we publish, the author will receive that issue of *The Z-Letter* free. If the author has a subscription (see below), the subscription will be extended for one issue.

Letter policy

The editor and the publisher reserve the right to edit letters received to conform to standards of taste, decency, and language. We will NOT distort the meaning of any letter; we'll simply not print it first. If you are not willing to have any letter you send printed, or edited before printing, please say so in the letter. All other letters will be assumed to be for publication and become the property of Alpha Systems Corporation upon receipt.

Subscriptions

Subscriptions will be accepted for 12 or 24 issues. A subscription starts with the first issue after the subscription payment is received. The cost is $24 for 12 issues, or $48 for 24 issues, for subscriptions

mailed to U.S., FPO, or APO addresses. Subscriptions mailed to addresses outside the U.S., including Canada and Mexico, cost $32 for 12 issues, $64 for 24 issues. Back issues cost $2 apiece in the U.S., $2.67 foreign. Back issues are kept in print. There will be an index to *The Z-Letter*, updated every issue; its availability and price will be announced after each year of publication.

Subscriptions should be paid by check or international money order in U.S. dollars, mailed to Alpha Systems Corporation.

How to read your mailing label

If you are a subscriber, your address label lists when your subscription expires, for example, "Subscription expires with issue 12". If we have sent you a single issue in hopes that you will subscribe, it will be marked "Sample copy". "Complimentary" copies go to people we expect to spread the word of the newsletter's existence, and perhaps contribute information or articles.

THE STATE OF THE ART

Alpha ships other Borland products

In response to a number of orders from MS-DOS users who wish to purchase version 3.0 of TURBO Pascal, rather than version 5.0 available from Borland, Alpha has restored the MS-DOS material to the TURBO Pascal reference manual, with many corrections (this is a large part of the reason for the lateness of this issue). Alpha now offers TURBO Pascal 3.0 for CP/M, CP/M-86, MS-DOS and PC-DOS; TURBO DataBase Toolbox for CP/M, CP/M-86, MS-DOS, and PC-DOS; TURBO Tutor for CP/M-86, MS-DOS, and PC-DOS; and TURBO Editor Toolbox for PC-DOS and MS-DOS. All of these are for CP/M version 2.2, CP/M-86 version 1.1 or later, and MS-DOS or PC-DOS version 2.0 or later. Alpha is charging $60 for TURBO Pascal for CP/M, $90 for CP/M-86, MS-DOS, and PC-DOS. For the other Borland products, the price for the CP/M versions is $40, but $50 for CP/M-86, MS-DOS, or PC-DOS.

New versions of B/Printer, NuKey, I/OR available

The three standard Z-System IOPs have been rewritten for NZ-COM. Each program now consists of a .COM file and a .REL file; the .COM

file interprets the user's commands, while the .REL file is the IOP module. Before, the user had to create the .IOP file and load it into the IOP segment of the operating system before typing **nukey, bprint,** or **record.** Now creating the IOP and loading it is unnecessary. The .COM file for one of the new IOPs will determine whether its IOP is loaded; if it is not, it will close the current IOP, if any, and load its own.

The new IOPs (B/Printer 4.0, NuKey 2.04, and I/OR 4.0) are available from Alpha Systems at $40 each, or $90 for all three. Orders must be prepaid or COD.

Men at work

Version 4.0 of The Libraries, assembly-language subroutines that provide standard functions for the assembly-language programmer, is now being prepared by Hal Bower. Meanwhile, Al Hawley is working on version 1.0 of ZMAC and ZMACLNK, a macro assembler and a linker specially designed to work with version 4.0 of The Libraries. Completion dates for these products have not yet been set.

SLR assembly-language tools available from Alpha

Alpha Systems, by agreement with SLR, offers the latter's Z80ASM Z80-only assembler, SLR180 Z80 and HD64180 assembler, and SLRNK linker, for $50 each. SLR's virtual assembler and virtual linker, Z80ASM PLUS and SLRNK PLUS, are available for $195 each.

OEM version of NZ-COM finished

A version of NZ-COM that does not require an existing CP/M system, with the consequent licensing fees to Digital Research, has been completed. OEMs who wish to sell Z-System computers now need only write the BIOS for their machines. This, combined with the OEM version of NZ-COM, gives a true dynamic Z-System. Unlike the NZ-COM for CP/M systems, which has its own BIOS jump table for warm boots, the OEM version has only 1 BIOS, a true warm boot, and utilities written for the BIOS still work without modification. Contact Alpha for pricing and details.

Goodbye, DT42

SemiDisk Systems, Inc., confirmed the end of production of the Deep Thought 42, a Z-System computer with HD64180 CPU, 512K RAM, 4 serial ports, up to eight disk drives, on-board video, optional hardware real-time clock and calendar, and The SemiDisk, a battery-backed RAM disk of up to 32 megabytes. According to SemiDisk, there were simply not enough orders for this 8-bit superstar. Support remains available for present owners of a DT42.

SemiDisk continues to make RAM disks for S-100 systems, Epson models QX-10 and QX-16, and PCs. Write SemiDisk, P.O. Box GG, Beaverton OR 97075, for information, or call (503) 626-3104.

CP/M public-domain software catalog

Sound Potentials, in Pennsylvania, sells disks with public-domain CP/M software. Their catalog lists title, author, date, size, and description for 540 programs. You order exactly the programs you want, which they will send in any of 90 formats. The catalog costs $2 from Sound Potentials, Box 46, Dept. A, Brackney PA 18812.

Tidbits from COMPUTER SHOPPER

It's always tempting to summarize the "CP/M Column" by Cheryl Peterson which appears in each month's *COMPUTER SHOPPER*. To do so would be unfair to Cheryl and possibly illegal, as well as reducing *The Z-Letter* to the status of a digest publication.

However, one bit of information in her column is so important that I feel compelled to repeat it here: People wanting to get into assembly language may wish to purchase *Beginner's CP/M and Assembly Language* from Robert C. Bender, P.O. Box 683, Lewistown PA 17044. The price is $12.95 per copy, which includes shipping and handling for U.S. orders. Cheryl praises it highly.

Cheryl's columns are a great source of information on the state of our community, and who's still supporting software. While her primary interest is in Commodores 128, she will print anything that has to do with either CP/M or the Z-System. Writing to every software house listed for their catalog will quickly dispel the notion that no one supports 8-bit computers any more.

By the way, *COMPUTER SHOPPER* also has a section (several columns) for the Coleco Adam, an orphan computer that, like the Commodores, runs CP/M. In the August issue, Paul Pappas gives the address and price ($20) for Jugg'ler 128, a format translator for Commodores 128, whose formats include the Adam.

An annual subscription to *COMPUTER SHOPPER* is $29.97 from COMPUTER SHOPPER, P.O. Box 51020, Boulder CO 80321-1020.

Progress on the hardware front

Circuit Cellar INK number 8 (April/May 1989) has an article of interest to any 8-bit hardware gurus, entitled *HD647180X – A New 8-Bit Microcontroller*. This chip is similar to the HD64180 used in the SB180 and SB180FX computers from Micromint, but has an additional 16K EPROM, 512 bytes of RAM, and an analog comparator. *That* should inspire some interesting hardware! Issue 8 also has part 2 of *Writing a Real-Time Operating System for the HD64180*. Issue 9 (June/July 1989) was not nearly so interesting (I guess they can't all be gems). Micromint announced in an ad in both issues that the price for an SB180 (9 MHz, no RAM) is now $195; $295 for the same plus Z-System, BIOS and ROM source code; and $89 for the COMM180 SCSI hard-disk adaptor board.

An annual subscription to *Circuit Cellar INK* is $14.95 from Circuit Cellar INK, P.O. Box 2099, Mahopac NY 10541-9875.

SUPERMICRO 2 comes out

The second issue of *SUPERMICRO*, formerly *The S-100 Journal*, proved to be well worth the long wait. Articles included *A Primer on the SCSI Interface* by Chuck Bigham, *Building a Z280 CPU Board for S-100* by George A. Warner, and *Run MS-DOS as an S-100 Satellite Task* by Michael Hart. A great issue!

An annual subscription to *SUPERMICRO* is $24 in the U.S. (Canada and Mexico add $10, other countries add $16) from SUPERMICRO, P.O. Box 50777, Provo UT 84605-0777.

Modula-2 compilers compared

An article called *Seven Compilers And A Book* in *Micro Cornucopia* #47 (May-June 1989) compares a number of Modula-2 compilers, including FTL Modula-2 for CP/M, with Turbo Pascal 3.0. The article by Michael S. Hunt also recommends NZ-COM to all regular CP/M users.

The CP/M Notes column is another good place for software-vendor addresses and getting your questions answered. The emphasis here is on Kaypros. An annual subscription to *Micro Cornucopia* is $18 in the U.S. from MICRO CORNUCOPIA, P.O. Box 223, Bend OR 97709.

BUSCON '89 EAST

Those who live in the eastern half of the country who wish to see what's new in STD, VME, MultiBus I or II, PC bus, NuBus, etc., will want to attend BUSCON '89 EAST at the Royal Plaza Trade Center, Marlborough, Massachusetts. The conference dates are September 11-14, exhibit dates September 12-14. Admission to the exhibit is $10 per day; a one-day pass to the sessions, including admission to the exhibits, is $215. Write CMC Registration Dept., 200 Connecticut Avenue, Norwalk CT 06856-4990, or phone (203) 852-0500, or fax (203) 838-3710.

STD sources

Since BUSCON '89 WEST in February (see last issue), I have received brochures from a number of sellers of STD and standalone boards with Z80 or HD64180 CPUs. I have used none of these products, but the addresses may be useful to anyone planning to replace a worn-out computer. See also the addresses listed in last issue.

Micro-Link Products, manufactured and distributed by SEA-ILAN, Inc., 14602 North US Hwy 31, Carmel IN 46032, (317) 846-1721. STD 4 MHz CPU card, 4 MHz 8085A single-board computer (SBC), 4 MHz Z80 SBC, DRAM cards, bytewide memory cards, interface cards, modem card, I/O cards, etc.; also card racks.

Mitchell Electronics, 8481 Rock Riffle Road, Athens OH 45701, (614) 594-8532. Z80 STD boards, RAM disk with battery, fig-FORTH, in 2.5, 4, or 6 MHz.

MIZAR, 1419 Dunn Drive, Carrollton TX 75006, (214) 446-2664, (800)635-0200. STD Z80 CPUs, Z280 CPUs (8 or 10 MHz), RAM disks, EPROM boards, I/O and interface modules.

Octagon Systems Corporation, 6510 W. 91st Avenue, Westminster CO 80030, (303) 430-1500. STD CPU, counter, I/O, memory cards, CAMBASIC language, 6 MHz 64180 or 8 MHz Z80. Also card cages, keypads, cables, power supplies, etc.

R.L.C. Enterprises, 4800 Templeton Road, Atascadero CA 93422, (805) 466-9717. STD motherboards, card cages, Z80 SBCs, parallel I/O and CTC cards, counter timer cards, memory cards, 2.5 and 4 MHz.

VersaLogic Corp., 3888 Stewart Road, Eugene OR 97402, (800) 824-3163. STD Z80 CPU boards from 2.5 to 4 MHz, V-FORTH, C, and BASIC cross-assemblers (run on a PC, target Z80), Z80 multifunction boards, battery-backed memory boards, card cages.

ZIATECH Corporation, 3433 Roberto Court, San Luis Obispo CA 93401, phone (805) 541-0488. V20 and V50 STD SBCs, 8085-compatible and Z80-compatible modem cards, video/keyboard controller cards, Winchester/floppy-disk-controllers, etc.

ZILTEK Corporation, 1651 East Edinger Avenue, Santa Ana CA 92705, phone (714) 541-2931. Z80 SBCs, Z80 STD CPUs, 64180 SBC with C compiler built in. Also DMA controllers, DRAM boards, color graphics board, interval timer board, CRT controller board, many others.

ASK ALPHA

When you write to Alpha, please remember that we are one full-time person (Joe Wright) and one other person with a separate full-time job (David McGlone). Please send orders to Joe at 711 Chatsworth, and questions and comments about ***The Z-Letter*** *directly to me at 720 South Second Street. That way we don't have to spend time separating one kind of letter from the other, or processing a letter many times. Any questions I can answer without asking Joe means that much more time for him.*

5 March 1989

Sirs:

Read a note in a Kaypro user group newsletter. Herewith $24 for a 1-year subscription to *The Z-Letter*.

My toy is a super-annuated SOL-20 (also a CCS machine, and, at work, a PDP-11 clone). The SOL is highly upgraded: 696-compatible, Z80, 6 MHz, 80X24, high capacity 5¼, hard disk, RAM disk, etc., etc. My preferred language is assembler, but am familiar with (and own) BASIC, Pilot, FOCAL, ALGOL, Pascal, FORTH, C, etc., etc. I hate WordStar (and use Spellbinder), and write most of my own (small) programs. If that history would be useful to other owners of antique – still working and used – machines, why, then, pass it on.

Thanks,
William D. Loughman
393 Gravatt Drive
Berkeley CA 94705

Thank you for writing, William. I'm glad to hear your old machine is still serving you so well. Of course, you've upgraded it so much that probably the only thing left of the original SOL is the box, if that!

I'd like to mention here the Eagle Computer Users Group, whose newsletter is prepared by yours truly. Because Spellbinder was bundled with all models of Eagles, ECUG is a Spellbinder users' group as well as a users' group for owners of Eagle computers. Write the Eagle Computer Users Group, P.O. Box 3381, Saratoga CA 95070, for three free issues of the newsletter. Membership is $15 per year.

Gentlemen,

I finally have time to respond to the copy of *The Z-Letter* which arrived in a recent mail delivery. What a wonderful surprise that was; and it almost explained why my previous inquiry regarding the Z-System went unanswered for so long. My copy has a serious flaw in it, though, in that pages 6 and 27 are missing (photocopy error?) and there was supposed to be some important subscription information on page 6. I was favorably impressed with what I saw, and would like to see more of it. It may be that CP/M is dead and the Z-System is its revenant come to plague "Big Blue" and its clones. It is just as likely that the multi-purpose 8-bit computer is just as dead but is that spectre on the horizon a code-compatible 16-bit Z280? I can manage with my Osborne 1 in spite of its limitations, but all too often something – usually disk-swapping – will intrude on my complaisance. A true 128K system would greatly reduce that problem, and a 256K system should eliminate it completely, even after I layer the operating system with hard- or RAM-drive extensions and perhaps a PRESTO or BACKGROUNDER or Eric Gans' GSUB utility. The extra speed of the Z280 might allow an 8086 or 8088 emulator to run on it to emulate "Turbo-XT" performance and compatibility for those who insist on such trappings.

You responded to a letter from Christopher Meissen with several comments on outdated computers that deserve some rebuttal. It is true that the newer machines can put more of nearly everything in a smaller box and sell it for fewer dollars than was possible when I bought my first 8-bit system, but that may be irrelevant. I have already admitted a small desire for a slightly larger memory on a system that really can't be expanded that way, but much of my dissatisfaction will be solved when I implement the RAM disk sitting on my shelf waiting installation. I use my computer mainly as a word processor with some spreadsheet and data-base work thrown in. "My" system also does some development work so that – her– system will be both more sophisticated in result and easier to use. I seldom have any problem with the speed of my systems, or any of the other so-called limitations. My chosen tool hits the task at hand nicely. The newer systems cannot do what I need done any better than the system I have, but I think the "apples and oranges" comparison is less accurate than, say, a family sedan and a maxi-van or pickup.

David Meyer
2 Franklin St.
Medford MA 02155

Printing errors do happen, and it is inevitable that some should slip past us into the mail. The thing to do is just what Dave has done, and let us know, so that we can send you a replacement. Dave, you will be glad to hear that, because the Z280 has separate code and data space, existing Z80 programs can go to 128K with little or no modification.

As for my reply to Christopher Meissen, I stick to my opinion that the difference between the earliest personal computers and the newest is much greater than has ever existed in the auto industry. This does not mean, however, that I think newer is better, or that even older models of plain CP/M machines can't serve most people perfectly well. If I thought the Macs and PCs were all that great, I'd own one and do some other newsletter, wouldn't I?

To Self Install or not to Self Install

The environment table accounts for a lot of the power of the Z-System. But with successive ZCPR3 levels, we have had several variations in the way TPA programs get access to this table. This note is a request to find out to what heroic lengths we, the software developers, need to go to find the environment table and realistically support the Z-System community.

Back in the days before ZCPR3, the environment table was assembled into each TPA program. Considering the many advantages that have come about since then, I suggest that we no longer support that mode at all.

With ZCPR 3.0, the environment table was located in the operating system area. A pointer, location 0109h, has the address of the environment table. If the location of the environment table changed with a new system, or if you copy a program from a disk where the environment table is in a different place, the program would fail unless it had been "installed" by a utility such as Z3INS.

An alternate "installation" method for 3.0 support is to scan memory for the environment table at execution time. This technique has the

powerful feature that programs do not have to be installed with Z3INS and can be freely copied among disks for different system configurations.

Later versions of ZCPR3 use an "install at load time" logic whereby the pointer at 0109h is set to the current environment table when the program is loaded into memory. Thus, the concept of "installing" has been removed from the user level. (As it should be!)

The question I would like to have feedback on is the following: do we need to continue supporting the 3.0 requirement of manually installing TPA programs with Z3INS or doing a memory scan to link the environment table? That is, is anybody still using ZCPR 3.0?

Environment Table Management

The environment table is the "key" to the Z-System. But programs must still execute on the old CP/M system. Considering past, present and probable future developments where the environment table pointer will be installed at load time by the Z-System and its successors, the following pseudo code describes one adequate environment table validation scheme for type 01 programs:

```
ENVVAL:
   If [0109] EQ 0000 Then:
      Assume CP/M system

   If [0109] NE 0000 Then:
      Ensure 0103 ... 0107 contains "Z3ENV"
      Ensure 0108 contains 01
      Ensure [0109] + 03  ... + 07 contains "Z3ENV"
      Ensure [0109] + 1B, 1C contains [0109]
      Have a Z-System

   Else
      Assume CP/M system
```

Programs are released with 0109 set to 0000.

Other schemes are welcomed.

Ernest Stiltner
Skunk Creek Computing Services
1985 Kohler Drive
Boulder, Colorado 80303-5240

Thanks, Ernest, for your letter. I passed it to Joe Wright for his opinion:

Dear Ernest, as author of Z-Com and now NZ-COM and being somewhat intimate with ZCPR34 and the New Z-System, I am probably one of the developers your piece talks to.

First, the Type 2 Internal Environment Descriptor is dead. It has no place anymore in the New Z-System. All programs which depend on Z3ENV must get their information from the External Environment Descriptor. Any programs currently using Type 2 must be reassembled to use the Type 1 environment.

As we write new Z-System utilities and applications, I would like them to remain downward compatible all the way to CP/M. This is done by assembling the program with the Z3ENV address at 109h equal 0. When run out of the box, the program checks the high-order address at 10Ah for zero, and assumes CP/M if so.

As you suggest, the program might try to determine whether Z3ENV exists in high memory and "install" itself if it finds one. Cute as this is, I don't think the test can be rigorous enough to guarantee success. Given the dynamic nature of the Z-System, copies of environment descriptors may appear almost anywhere in the memory map. Finding one that fails the test does not mean that there isn't another one. Also, finding one that passes the test doesn't mean that it is complete, or even in use by the current command processor. Even if the test is 99% successful, is it worth doing when we can expect 1% failure? Maybe, but I think not.

By my philosophy, tests should be as simple as possible and should be assigned to the right process. It is the command processor which determines the address of Z3ENV and passes it to the application. It is improper for the application to second-guess the command processor in this regard without extremely good cause. ZCPR 3.0 does not pass the Z3ENV address (ZCPR 3.3 and 3.4 do), and so either Z3INS or the above auto-install technique is needed. In any case, the test in the application should be simply whether (10Ah) equals 0. If not, assume the address at 109h is correct and go for it.

TURBO Pascal under Z

When you write programs to run in the Z-System, you will want them to meet the standards of Z-System programs. One of the nicest standards of the Z-System is the syntax message.

Z-System utilities accept parameters and options. These modify the behavior of a utility when you run it. Consider the directory utility DIR. If you type **dir‹CR›**, DIR will list all the files with the directory attribute set, in whatever drive and user number you're in, in alphabetical order. But suppose you only want to see .COM files? You then type **dir *.com‹CR›**. If you wanted to see what .HLP files you had in directory A15:, you would type **dir a15:*.hlp‹CR›**. ***.com** and **a15:*.hlp** are *parameters;* they make DIR behave differently from the way it behaves if you run it with no parameters.

Some words in the command are called *options*. Where parameters usually specify a file or set of files, options usually indicate others matters, such as what kind of files, what kind of display the utility should use, and so forth. The directory command **xdir fw*** will display all files in the current directory that begin with FW and have no file type. However, **xdir fw* /u** will display files that begin with FW and have no type on all user areas of the current drive. **/u** is the option that means "all user areas" to XDIR.

There is little consistency from one utility to another in what a letter means when used as an option. To PUBLIC, U means a given user area to make public; to a sort program, U might means unsequential; and so on. However, the slash option tells most Z-System utilities to print a brief description of what they do, which is called a *syntax message*. In other words, /u might mean something different to different utilities, but // means "Print your syntax message" to most of them.

The sample TURBO Pascal program that follows displays some of the things you should strive for in writing programs. It begins with a long comment that describes how the program should work. This is a good check later, when you think you're done; run the program, making sure that it behaves as the comment promises under all the circumstances stated.

Discrete procedures PrintSyntaxMsg, GetFileNames, and MakeTemplate follow. PrintSyntaxMsg prints the syntax message, and nothing else. What you see within the WRITELN statements is exactly what a user will see if he types **unfont //**. GetFileNames uses TURBO Pascal's PARAMCOUNT routine to check that both file names were supplied. If both were, it uses the first one for the font-file name and the second one for the template-file name. Note PARAMSTR, which allows the programmer to fetch a particular parameter by its order in the command string. If either file name was not supplied, GetFileNames asks the user for the omitted one. As written, it assumes that if only one is supplied, it was the template-file name that was omitted. You could easily have it confirm this, rather than assume it.

MakeTemplate is the true guts of the program, the procedure that does all the work; as it is not relevant to this article, I have represented it by a dummy procedure that actually does nothing.

The main procedure is a skeleton program that does very little. This is as it should be. If the first parameter is //, it prints the syntax message and quits. Otherwise, it calls GetFileNames; opens the font file read-only; opens the template file, purging the existing file of the same name, if any; calls MakeTemplate; and then closes the files. As it begins each step, it notifies the user with a message to the terminal.

```
PROGRAM UnFont;
(* PROGRAM: UNFONT.PAS, version 1.00

   AUTHOR: David A.J. McGlone

   BEGUN: 10 July 1988

   This program reads an HP LaserJet SoftFont and creates a
   template file of the kind used by MagicFont from Computer
   EdiType Systems.  In other words, it reads an object and
   generates a source.

   The purpose of this program is not to violate anyone's copyrights,
   but to encourage the creation of more SoftFonts, by making the
```

process easier. Editing a template file like the ones generated by this program is easier than starting one from scratch.

The syntax of UNFONT is:

UNFONT font-file template-file

where ‹font-file› is the name of the file containing the SoftFont, and ‹template-file› is the name desired for the template file generated by the program. If the second parameter is omitted, UNFONT will ask you for it. If a file of that name exists already, it will be erased. If both parameters are omitted, the program will ask you for both names.

INPUT: An HP LaserJet SoftFont file.

OUTPUT: A MagicFont template file.

SYSTEM:
Hardware: SB180FX (Micromint Inc.)
Operating System: ZCPR 3.3, ZRDOS 1.7 (Alpha Systems Corp.), XBIOS 1.15 (XSystems Software)
Pascal Compiler: TURBO Pascal 3.01A (Borland International, Inc.)
Word Processor: Spellbinder 5.3 (L/Tek, Inc.) *)

```
VAR   FFName, TFName: STRING [80];
      FontFile: FILE;
      TemplateFile: TEXT;


PROCEDURE PrintSyntaxMsg;
(* Prints a brief message about the program. *)
    BEGIN (* PrintSyntaxMsg *)
    WRITELN;
    WRITELN ('UNFONT - Uncompiles laser fonts - Vers. 1.00');
    WRITELN (' Syntax:  UNFONT [[dir:]ufn] [[dir:]ufn]');
    WRITELN ('              UNFONT //');
    WRITELN;
    WRITELN ('The first file is the font file, the second is the');
```

```
    WRITELN ('template file produced by UNFONT.  If you omit
the');
    WRITELN ('second parameter, the program asks for the name.');
    WRITELN ('If you omit both, it asks for both.  A parameter');
    WRITELN ('of "//" results in this message.');
    END;  (* of procedure PrintSyntaxMsg *)


PROCEDURE GetFileNames;
(* Gets the name of the font and the template files. *)
    BEGIN (* GetFileNames *)
    FFName := ' ';
    TFName := ' ';
    IF (PARAMCOUNT >= 2)
        THEN
            BEGIN
            FFName := PARAMSTR (1);
            TFName := PARAMSTR (2)
            END
        ELSE
            IF PARAMCOUNT = 1 THEN FFName := PARAMSTR (1);
    IF FFName = ' '
        THEN
            BEGIN
            WRITELN;
            WRITE ('Hello.  What is the name of the font file?  ');
            READLN (FFName);
            WRITELN ('      Thank you.')
            END;
    IF TFName = ' '
        THEN
            BEGIN
            WRITELN;
            WRITE ('What is the name of the template file?  ');
            READLN (TFName);
            WRITELN ('      Thank you.')
            END;
    UpShift;
    END;  (* of procedure GetFileNames *)
```

```
PROCEDURE MakeTemplate;
(* Reads font and character information and writes information to
template file. Here represented by a dummy procedure that does
nothing. *)
    BEGIN (* MakeTemplate *)
    END; (* of procedure MakeTemplate *)


(*              MAIN PROCEDURE SECTION                  *)


BEGIN   (* main procedure *)

IF PARAMSTR (1) = '//'
    THEN PrintSyntaxMsg
    ELSE
        BEGIN
        GetFileNames;

        (* Open font file R/O. *)
        ASSIGN (FontFile, FFName);
        RESET (FontFile);
        WRITELN;
        WRITELN (FFName, ' opened for reading.');

        (* Open template file, purging existing file if any. *)
        ASSIGN (TemplateFile, TFName);
        REWRITE (TemplateFile);
        WRITELN (TFName, ' opened for writing.');

        (* Generate template file from font file. *)
        WRITELN ('Starting ', TFName, '...');
        MakeTemplate;

        (* Close files. *)
        CLOSE (FontFile);
        CLOSE (TemplateFile);
        WRITELN (FFName, ' and ', TFName, ' closed.  Thank you.');
        END;

END.    (* of main procedure *)
```

BEGINNER'S CORNER

In the interests of getting this issue out quickly, I am going to defer the Beginner's Corner and the first article of the Spellbinder/WordStar comparison until next issue. See you in a month!

TRADEMARKS

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