TANDY LAPTOP COMPUTING APRIL 1992 -VOL. 9, NO. 4

TERRY KEPNER'S

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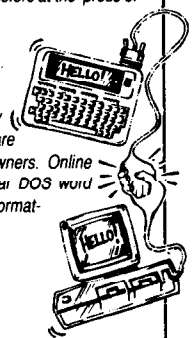

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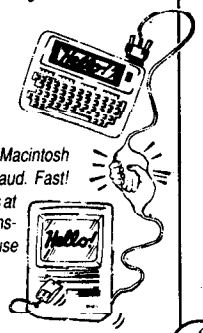

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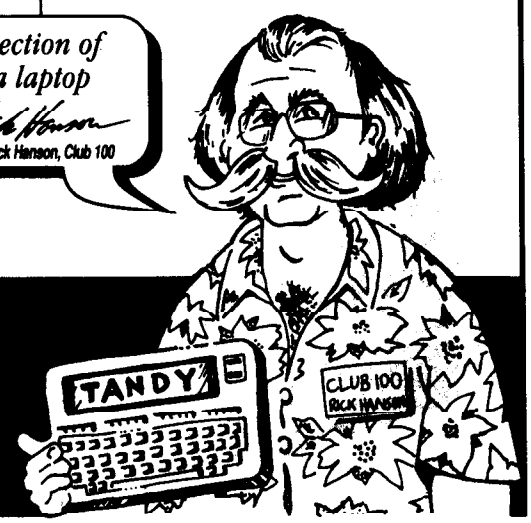

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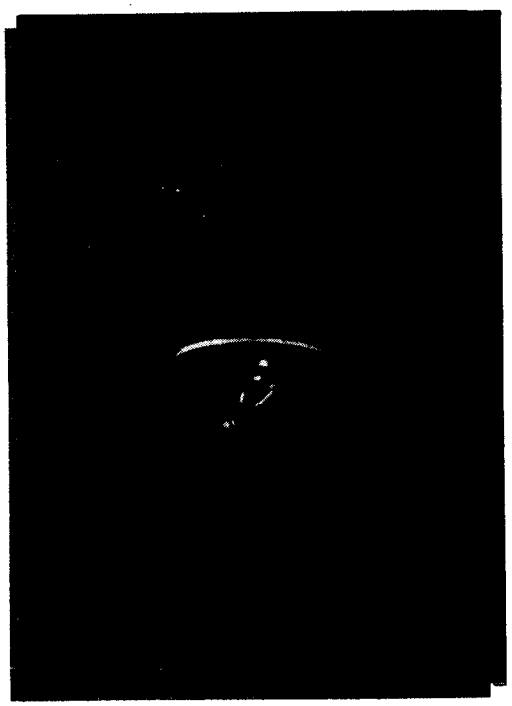
VOL. 9, NO. 4
April 1992

ON THE COVER:
25 years of Star Trek is being celebrated by fans everywhere. Not to be outdone, Portable 100 offers its own salute to the fantastic universe of the USS Enterprise with this beautiful shot of starship and planet gleaned from the archives of our intrepid Captain, Terry Kepner. Needless to say, all life support functions aboard Terry's starship are operated from Tandy portable computers and the Captain's Log is maintained on a Model 102.



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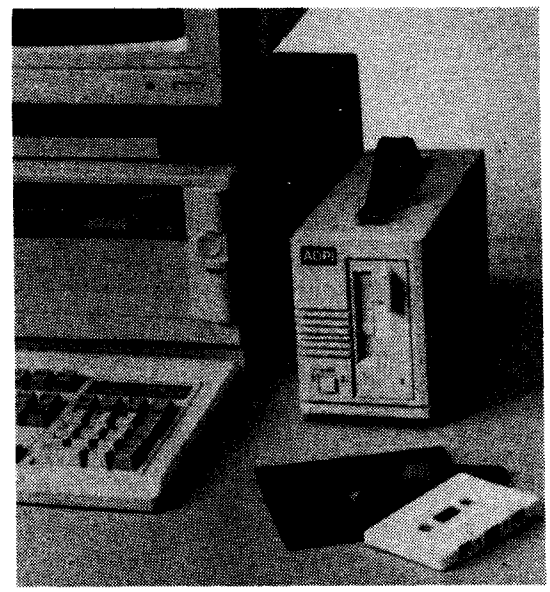

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ROM WITH A VIEW

Advertising space . . . the final frontier. This is the special April 1992 voyage of the Starship *Portable 100*, its continuing five year mission, to survive as a publication and continue to bring quality issues to an enthusiastic audience of computerists, not one of which wears a red tunic.

Third Officer's Log, Stardate, Thursday, around tea time. As deadline approaches, I've noticed an increase in tension in the air. It's almost as though yet even more advertisers are discovering this vessel. Welcome to Venture 2000, a company in Virginia that manufactures expansion chassis that operates from the parallel port. These guys offer 600MB hard drives as well. What do you think about that, computer?

"Simply Mahvalous, dahling..."

Note: No more Billy Crystal videos on the computer.

Back to the business at hand. We're heading into an unknown part of the galaxy. The view screen indicates a holographic image ahead. Who can it be? Is it some strange, god-like creature from an even stranger planet? It's . . . it's . . . Rick Hansen. Oh, no, we must have entered the Club 100 Zone by accident! The hologram is muttering something. Put it on audio, Wesley. No, no, not the %^&*$# Rolling Stones, the alien creature!

"Buy a TurtleShell2 for $14.95 plus shipping and get protection for your WP-2 in any situation! Not even a Corn can penetrate a TurtleShell2 . . . "

This must be where old hallucinations go to die. Warp factor eight, ensign.

We've suddenly shuddered to a stop in empty space. A strange force field has descended over the entire ship. Uh, oh . . . it's the dreaded, sometimes deadly, but always interesting, Tri-Mike Network. I hadn't realized we were that far east. I don't know if we can shake this menace.

"Engine room here, third officer, what're ye doin to me wee bairns, you brute? They canna take much more of this."

I instruct engineering to add three *Super ROM*s and three *Ultimate ROM*s to the matter, whattsa-matter mix. It works. We break out of the Tri-Mike Network like a ball bearing from a slingshot. But now, we have a larger problem. An alien bemuscled body-builder named Rombo and his pet Owl have beamed aboard from the planet Emee and have announced that they are taking over the ship. He says he's a Wee Tax collector and he wants paying right now. Worse, we're lost.

I consult the Micro-Ref for a ruling and he says we're SAFE for the moment, but that we're in the proximity of a Gender Changer, not a pleasant prospect. I've got to get an InfoGrip on myself, call in the Systems Peripherals Consultants and get us the heck outta here.

"Third Officer, we're doin warp 29! At this rate we'll be outta the galaxy in six seconds!"

I call for Optical Data to be displayed on the screen. I don't know where we're going but we're really zoomin'!

All of a sudden the entire ship goes black. My worst nightmare (other than meeting Cher without Binaca) has come to pass. It's a Computer Reset. We'll have to switch to the SolarMetrics power supply until the engines can be brought back on line. Meanwhile, we drift.

The alien Rombo, meanwhile has been captured and brought to the bridge.

"I admit it. I'm the one who put Purple in your computer, but I was only trying to spread good memories."

Something about this guy sounds familiar. This Rombo outfit looks like a disguise. I step forward and remove it. I can't believe it! My starship has been invaded by Paul Globman, the admiral in charge of the starship Model 200.

"Well, it was getting lonely over there. Nobody to talk to. I was studying to be a MicroMime, but that didn't pan out."

I sent him to the brig with someone to recite him Software Versand other poetry. I told him his Destiny lies in new Techonology.

Wait a minute . . . here comes Captain Kepner to resume command. Now I can go to my cabin and sack out on my newest Ultrasoft Innovation. If you've read to the bottom of this editorial, can you guess which advertiser hasn't been included in ROM WITH A VIEW? Be among the first ten to write with the answer and we'll mention your name in the next column. Terry says this is the last time the ad salesman writes this column.

Bob Liddil

Toolbox

Manuscripts were typed into Microsoft Word 4.0 on a Tandy 1500 HD, where they were edited, spell-checked, and had basic format instructions inserted. From there they were loaded into a Tandy 4000 (80386 CPU, Tandy EGA Monitor, Tandy LP-1000 LaserPrinter) desktop computer and placed into Aldus' IBM PageMaker 3.01 Once there, design decisions on photo, figure, and listing sizes and placements were made. Here, pull quotes are placed, headlines, intros, and bylines are sized and positioned, and advertisements positioned.

Normally, the Tandy LP-1000 is capable of emulating only a Hewlett Packard Laser Printer Plus, but with the addition of the Destiny Technology Corporation (300 Montague Expressway, Suite 150, Milpitas, CA 95035. (408) 262-9400) PageStyler 4.5MB kit, the LP-1000 is turned into a fully-compatible PostScript printer, with all 35 native fonts that are found in the Apple LaserWriter Plus printer. The Destiny PageStyler is available through the Tandy Express Order Hardware system.

Page previews were output from the Laserprinter. When everyone was satisfied with the appearance, final pages were output and artwork and line art ads were positioned. The finished magazine was then delivered to the printer, who printed it, labeled it, and mailed it to you.

TERRY KEPNER'S
portable 100

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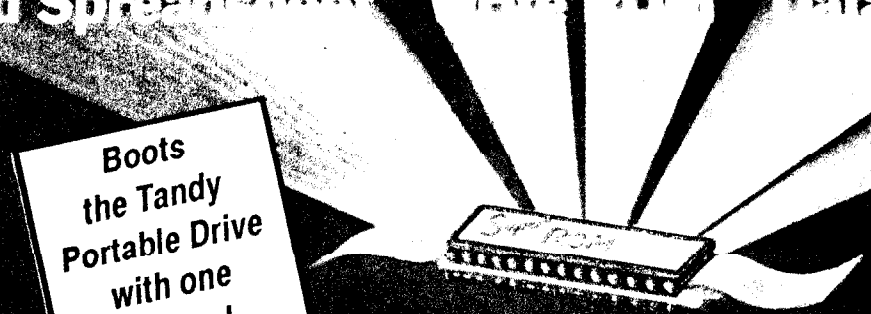
SUPER ROM

Lucid Spreadsheet Write ROM Database Outliner



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All on one ROM. Truly the finest four programs available for the Model 100 — guaranteed. Try it for 30 days. If you aren't blown away by the excellence return it for a full refund.

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The four best programs for the Model 100 all on one ROM. 32K of power without using any RAM for program storage. This is the PCSG Snap-In ROM that just presses easily into the little ROM socket in the compartment on the back. You access the four right from the main menu like built-ins.

Write ROM — the definitive word processor for the Model 100. Function key formatting or dot commands. Search and replace. Library feature — inserts words, phrases or whole documents into text from just a code. MAP lets you see a picture of your document. In all there are 60 features and functions. No one can claim faster operation. FORM lets you create interactive forms with on-screen prompts that you can answer from the keyboard. Nothing else for the Model 100 compares with the features of Write ROM. Exactly the same as the Write ROM sold as a single program. Infoworld says it "makes the Model 100 a viable writing unit ... surpassed our highest expectations for quality and clarity."

Lucid Spreadsheet: This is the one PICO magazine says "blows Multiplan right out of the socket" and Infoworld performance rated as "excellent" and said "makes the Model 100 compute." Gives you features you cannot get with Lotus 123. Lets you build spreadsheets in your Model 100 that would consume 140-150K on a desktop. Program generating capability with no programming knowledge required. Variable column widths. Includes find and sort with function key control. It's fast, recalculates like lightning. No feature has been taken from the original, only new ones added.

Database: This is a relational data base like no other. You can do everything from mailing lists to invoices. No complicated pseudo-coding, you create input screens as simply as typing into TEXT. You are not limited by size; you can have as large an input screen as you wish. Prints out reports or forms, getting information from as many files as you like. Complete math between fields. Total interface with Lucid worksheets.

Outliner: Does everything that Thinktank does on a PC but a whole lot better. Includes a Sort for your headlines. Lets you have headlines of up to 240 characters. Has cloning, hoisting and sideways scroll up to 250 characters. Like Lucid, this one sets a new standard for outliners. This is the way to plan and organize your projects.

Present Lucid and Write ROM owners can upgrade for $150. If you have both it's $125.

As usual PCSG sells the Super ROM on a thirty day guarantee. If for any reason you are not satisfied, simply return it for a full refund.

We are excited about this product. Super ROM gives the Model 100 the true power of a desktop. No other multi-program ROM has software that compares. But don't take our word for it. We invite you to make that comparison yourself. Priced at $199.95 on Snap-In ROM.

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What To Do, And How To Do It

Okay, Nuge. You asked for it! MS-DOS is boring! MS-DOS is complex! MS-DOS is insatiable! MS-DOS overpowers the beginner. Let me try to explain.

I want my traveling computer to be useful to me, not prestigious, not heavy, and not expensive. I don't even care much about compatibility anymore.

To me, the M100/T102/T200 "instant on" feature and quick-to-application time are important parts on it's value. Another piece of value is the ability to customize software in a way that makes sense to me.

The easy menu access is what made the Macintosh attractive (not the cute icons). The Model T has this, MS-DOS does not. Of course, MS-DOS can be configured any number of ways to look like a graphical interface but this is, in fact the problem . . . too many choices, none of them being completely satisfying . . . and none of them being "customizable" or "streamlineable" to the extent that they are wholistically useful. We have *DeskMate, MSWorks, Agenda,* and other "integrated" packages. Why is it that these packages seem to really only have great features in three out of the four main categories? They always force me to go to a different program to get that fourth greatness or compatibility. With the Model T, we could customize the environment with the learnings from pointer redirecting by the Model T wizards. MS-DOS applications are iron-clad and impenetrable.

MS-DOS software is expensive and comes with large manuals to study and store. The Model T software was simple and not too expensive.

So, here I am, surrounded by 8085, 8086, 68020 machines, yet not having a good or easy way to seamlessly move between the few isolated programs I use to be effective. I am left to buy new software when some new capability (which I can really use) is offered. But it always seems that when I buy something new, something else I use drops out of its efficiency. Another TRADE-OFF to be faced and reconciled! UGH!

This might be understandable except that MS-DOS consumes mass quantities of memory and weight (those disk drives). Yes, those **SLOW** disk drives.

Why is MS-DOS insatiable? Because there is always something that is changing which requires new versions and new software. It is impossible to keep up.

My God, MS-DOS doesn't even let you recover from changing to a drive where there is no formatted disk present! How hard can it get?

This stupidity is rivaled only by the lack of standard keyboard commands across word processors! Another of my hot buttons.

Boy, I sure wish IBM had chosen Motorola's 68xx chips instead of Intel's 808x chips. Great idea, short sighted implementation.

Do I have a suggestion for improvement? Yes, Take a carefully planned approach to your Model T-to-MS-DOS readers by considering "where they are now."

1. Assume they already have MS-DOS machines and are about 50% beginners, 40% experienced with MS-DOS.

2. Assume that they are unhappy with MS-DOS'S awkwardness and required plethora of non-interactive application packages needed to get things done.

Explain ways to minimize RAM and disk space .

3. Assume that they are frustrated with all the "this plays with that, but that won't play with this unless Microsoft and IBM merge with Apple under a full moon".

4. Go back to your core competency as an informative and user focused magazine! By this I mean:

- Start offering GW-BASIC programs which do neat, simple things (utilities, screen changing, directory archiving, word processor tips, macros, etc.). As you will not be able to compete with PCMag and it's utilities, help readers get access to them (CompuServe?).

- Keep readers informed as to the best-of-the-best in the world of shareware, as well as where to get it and about how much it will cost. I don't think you can afford the page space to do a complete analysis, but ignoring the installed base of MS-DOS applications or other ongoing MS-DOS marketplace issues will chase readers away.

- Offer batch programs and explain how they work (step by step). These are great time savers!

- Get readers interested in the flexibility of MS-DOS and give lots of examples with explanations of why you need to set a path statement or use 20 buffers, etc.

- Spend some technical column space on how memory is segmented and how 8086/8088 assembly language is generally a superset of 8085 language. Show readers how to use DBUG to get a hex listing into a program on their machine. Do some simple 8086 asm programs to entice interest in the tinkerers out here.

- Fully explain particular user's setups (hardware, software, peripherals, cables, power supplies, etc.). This could be the setup an individual uses for his situation and why he uses it that way (tradeoffs, disks, RAM) ... perhaps someone who travels a lot and who wants to be fast and light ... perhaps tied to special hardware systems or scientific computing. These testimonials and examples will help convince the readers that there may still be an effective, simple combination of things at the exit of the MS-DOS maze.

- If some neat, simple hardware project comes along (like a RAM expansion or a battery supercharger), tell us how to do it, where to get all the parts and about how much they may cost.

- Explain the ways to minimize RAM and disk space for some widely used packages (I really do like *MS Works,* but the terminal emulation package is unacceptable for use with my employer's VAX). This puts you on a par with the user who thinks MS-DOS isn't all it's cracked up to be and knows that the MS-DOS programs are too expensive for what you get. These "frugal users" will identify with this information (hey, we can all profit from frugality).

- Structure your programming articles with a mix of *GW-BASIC* (be-

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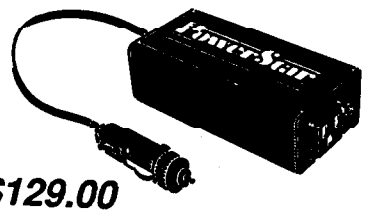

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cause we all have it and it is not too different from Model T *BASIC*) and *QuickBASIC*. *QB* is great and (as I mentioned in a past CompuServe message to you, it can be made to run on the 1100 FD). The *GW-BASIC* programmers/beginners will feel a kinship with your magazine and yet the advanced user will have something of interest. Remember, focus on small to medium size programs that do something (not just games). This clearly is an area where *VBASIC* could be a bridge from Model T to *GW-BASIC*. This would be even better if *VBASIC* were offered in a version that error checks the text (from *GW-BASIC*'S standpoint). This way, a non-spaced Model T *BASIC* program text file would be automatically parsed with spaces necessary for *GW-BASIC* (as well benefitting regular *GW-BASIC* text translations).

- When a hardware/software review is done, make it contain some real data (like: speed, compatibility, size, RAM needed, installability, quirks, screens supported, one disk operation or not, etc.). I am tired of reading reviews that go into how the author felt about the product and how it is like x and different from Y (when I don't know what X and Y are!). The warm fuzzies from the author don't tell me anything! I cannot afford to buy it to try it . . . then find out it won't work on my machine or my choice of screen display! Yes, buying from the original supplier would help but most of us buy from discount houses who advertise in the back of *PCMag* or *Computer Shopper*.

They value the simple effective use of a small device.

All MS-DOSers know about mail order! Expect them to still use it!

5. MS-DOS really is boring. No little icons, no fancy colors (in laptops). The biggest boredom of all comes from the realization that this neat hi-tech little computer takes lots of time and effort before it delivers any real value. I submit that *Portable 100* readers are still with you because they don't like fancy, complex systems but, rather, they value the simple effective use of a small device. Fluff and swoopy screens are valued only after the core effectiveness is captured. Work on the core effectiveness first. I used to carry my Model T whenever I traveled on business (a lot). I enjoyed learning about what bytes did what, and how I could manipulate them to do something no other package could do. I still look forward to any productivity tips from Paul Globman. It was his sharing of the "if-then-else" logic for *Lucid* that allowed me to value (and buy) *SuperROM* for my T200. But, beyond the fun of learning, I really haven't much need for any traveling computer anymore. In fact, I look back in anguish at the hours I spent on this machine when I should have been exercising or planning how to enjoy life with my family. Beyond my annual use of *TurboTax*, and a letter here or there, I don't play with the machine anymore. I'm just not willing to put the energy into it, knowing that I will still run into problems and disappointments of software/hardware/integration/not-quite-on-the-mark performance when there is nothing I can do to improve it.

About the only thing I can envision now comes from one small comment in the last issue of *Portable 100*. Someone

Continued on page 18.

COMPATIBILITY: Tandy Model 100/102, 200. MS-DOS and others with modifications.

ECON.BA: Economics Made Simple, at Last

This program lets you do banking so you can understand it.

by Matthew J. Russel

When I studied for the professional engineering examinations many years ago, it became obvious to me that bankers have made money transactions too complicated. Their jargon is confusing and intimidating.

Consequently, anyone trying to plan a financial future has an uphill battle because they must take the advice of bankers who make the rules, who have an entirely different motivation, and who are reluctant to talk in plain English.

Whether it is buying a car, planning an expansion to the house, setting money aside for college expenses, or looking ahead to retirement, the necessary economic calculations are really very simple.

Computers being what they are, there should be some simple way to put all the calculations into your Radio Shack Model T. Then you can carry the program with you as you negotiate for that next car or home improvement loan.

I have seen loan calculation programs in various computer magazines over the years and have generally been displeased with all of them. They are mostly just calculators that don't really help you solve anything but the arithmetic. They confuse you with jargon copied from the bankers and don't get at the real problems. Typically, they are longer than necessary, often clumsy to use, and have rules of operation that are difficult to remember.

So I decided to write my own program for the Model T. I wanted a program that is as friendly as possible—something I can run without instructions and without having to puzzle over what to do next, and something that leads me to economic decisions in plain English.

The resulting program only consumes 1,966 bytes of precious memory, so you can afford to leave it in RAM for when you need it. It uses text abbreviations to minimize program length and is structurally sound. It traps all kinds of errors and won't let you put in too little or too much information. It won't try to divide by zero and dump you with a half-screen of garbage and one of those awful *?IO error* messages. And it does all this without any unnecessary messages that delay things, nor with infantile *"What do you want to do next?"* questions.

But first, a bit about economics.

BASIC ECONOMICS

All economics problems are really of only two types. Either

```
1 DEFSTRJ-Y:DIMV(5):CLS:ML="Maximum loan
 for given":LS="Lump sum":PP="Payments":
YY="Future value":J="It will have a valu
e":K=" make":L=" a loan":M=" a lump sum"
:ND=" needed for":N=" need":O=" of":P="
payments":Q="eriodic":J1="—"
2 R="Deposit":S=" a future sum":T="ithdr
aw":U="#######.##":X=CHR$(27)+"Y":Y="If
you":T1="Loan Calculation DATE$ M.J. Rus
sel 1986"
3 PRINT@0,T1;:PRINT@40,"P"Q;P;O;L;J1;J1;
"-";:PRINT@80,ML;P;J1"-";:PRINT@120,"W"T
;"al from";M;J1;J1;"—";:PRINT@160,YY;O;
M;J1;J1;"—";:PRINT@200,LS;ND;S;J1;:PRIN
T@240,PP;ND;S;J1;:PRINT@280,YY;O" p"Q;P;
"—";:E=1:D=32:C=69:Z=1
4 PRINTXCHR$(D+Z)CHR$(C);: V-"":V-INPUT$
(1):A=ASC(V):IFA=13THEN7ELSEIFA=30THENZ=
Z-1:IFZ=0THENZ=7:GOTO4
5 IFA=31THENZ=Z+1:IFZ=8THENZ=1:GOTO4
6 IFV="Q"THEN35ELSEGOTO4
7 CLS: ONZGOSUB9,10,11,12,13,14,15:E=1:D
=33:C=61:GOSUB32:D=34:GOTO16
8 PRINT@120,"The annual interest rate is
":PRINT@160,"There are X periods per yr"
:PRINT@200,"And the term in years is":RE
TURN
9 PRINT@0,"P"Q;P;O;L:PRINT@80,"A loan or
 mortgage"O:GOSUB8:PRINT@240,"Requires"P
;O:RETURN
10 PRINT@0,ML;P:PRINT@80,Y;K;P;O:GOSUB8:
PRINT@240,"You can pay back"L;O:RETURN
11 PRINT@0,"W"T"al from"M:PRINT@80,R;M;O
:GOSUB8:PRINT@240,"And W"T;P;O:RETURN
12 PRINT@0,YY;O;M:PRINT@80,R;M;O:GOSUB8:
PRINT@240,J;O:RETURN
13 PRINT@0,LS;ND;S:PRINT@80,Y;N;S;O:GOSU
B8:PRINT@240,R;M;O:RETURN
14 PRINT@0,PP;ND;S:PRINT@80,Y;N;S;O:GOSU
B8:PRINT@240,"You must"K;P;O:RETURN
15 PRINT@0,YY;O" p"Q;P:PRINT@80,Y;K;P;O:
GOSUB8:PRINT@240,J;O:RETURN
16 GOSUB24:V="":V=INPUT$(1):IFV="C"THENG
```

Continued.

Listing 1. Help for saving and borrowing problems is as close as your portable computer.

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```
OSUB34:GOTO7ELSEIFV="Q"THEN35ELSEIFV="M"
THENGOSUB34:CLS:GOTO3ELSEGOTO17
17 A=ASC(V):IFA=13THEN20ELSEIFA=30ORA=31
THEN21
18 IFA=8ANDLEN(W)>0THENW=LEFT$(W,LEN(W)-
1):F(E)=VAL(W):GOTO16ELSEIFA<45ORA>57ORA
=47THEN16
19 W=W+V:F(E)=VAL(W):IFF(E)<10^6THENGOTO
16ELSEV=CHR$(31):GOTO17
20 IFF(3)=0THEN21ELSEI=F(2)/100/F(3):G=F
(3)*F(4):H=(1+I)^G:ONZGOSUB26,27,26,28,2
9,30,31
21 GOSUB32:IFA=30THENE=E-1:IFE=0THENE=4
22 IFA=31THENE=E+1:IFE=5THENE=1
23 W="":D=33+E:GOTO16
24 IFE=5ANDF(5)>9999999THENF5-F(5)/10^6:
PRINTXCHR$(D)CHR$(C)USINGU;F5:PRINTXCHR$
(D)CHR$(C)"M";:RETURN
25 PRINTXCHR$(D)CHR$(C)USINGU;F(E);:RETU
RN
26 IFI<=0ORI+1=0THEN33ELSEF(5)=F(1)*(I*H
)/(H-1):RETURN
27 IFI*H=0THEN33ELSEF(5)=F(1)*(H-1)/(I*H
):RETURN
28 F(5)=F(1)*H:RETURN
29 IFH=0THEN33ELSEF(5)=F(1)/H:RETURN
30 IFH-1=0THEN33ELSEF(5)=F(1)*I/(H-1):RE
TURN
31 IFI=0THEN33ELSEF(5)=F(1)*(H-1)/I:RETU
RN
32 B=E:FORE=1TO5:D=E+33:GOSUB24:NEXT:E=B
:RETURN
33 F(5)=0:RETURN
34 FORE=1TO5:F(E)=0:NEXT:I=0:H=0:G=0:V="
":W="":RETURN
35 CLS:MENU
```

End of listing.

you are going to *borrow* money or you are going to *save* money.

Borrowing problems are of only three major classes: either you want to know how much it will cost to borrow a certain amount, you want to know how much you can afford to borrow based on your ability to repay, or you want to know how much is left to be paid off.

Savings problems have only two classes. Either you are concerned with putting money into the bank or with taking it out. Those problems also have only two subtypes: either you are putting money in all at once or gradually, and you are taking money out all at once or gradually.

Everything else you can think of in managing money can be broken down into these parts. Building a retirement fund is a good example. You plan on putting money into the bank gradually until you retire, and then you plan on taking it out gradually until it and you are gone.

Generally, you don't put money into a retirement account at the same time as you are taking it out, but even that problem can be broken down into its principal parts and calculated piecemeal.

In general, problems that deal with varying interest rates or with different lump sums or periodic amounts being deposited or withdrawn must be broken down to their individual elements. Each of these situations is a fundamental problem such as I just described. For instance, if you deposit a lump sum at eight percent, then discover later that the interest rate has grown to nine percent you can calculate the future value of the original sum for the first earning period, then treat that result as a new initial sum at the new interest rate.

Likewise, if you deposit a lump sum in 1990 and it sits in the bank until 2001, then you decide to add to it with periodic deposits until 2008—you do two calculations to find the final value in 2008. The first is the future value in 2008 of the original

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1990 lump sum, and the second is the future value of the periodic payments starting in 2001 and continuing until 1998. The total value at the end of 2008 is the sum of the two values.

All economic calculations can be broken down into their individual parts and calculated, then the results totaled. That is the way the banks do it and it is sound mathematics.

Transforming the requirements for calculations into a computer program relies on the compound interest formulas, of which there are only three, and their inverses.

Each equation must know interest rate, time period of the transaction, and the number of interest periods. Then you can calculate the initial sum if you know the future sum, or you can calculate the future sum if you know the initial sum. Or you can calculate the amount of periodic payments or withdrawals if you know the initial or final conditions.

For simplification, I have not included the possibility of calculating the interest rate if all the other factors are known. That is an iteration process that unnecessarily lengthens the program. You can still do that calculation with this program by successive trials, and it is really pretty fast and still intuitive by that method.

USING THE PROGRAM

The program starts with a main menu and a single flashing cursor. There is no need to enter a number to select an option or to type anything at all. You use the up and down cursor keys to place the flashing cursor in line with the option you want, then press *ENTER*.

The cursor responds to the up-down keys in a recirculating fashion. If you are at the top of the list and move the cursor up, the cursor takes up its new position at the bottom. Likewise, if you push the cursor off the bottom of the list with a down key, it reappears at the top of the list.

There are no errors possible. No other keys are enabled at this

```
Loan Calculation M.J. Russel 1996
Periodic payments of a loan- - - - - X
Maximum loan for given payments- - -
Withdrawal from a lump sum- - - - - -
Future value of a lump sum- - - - - -
Future value of periodic payments- -
Lump sum needed for a future sum- - -
Payments needed for a future sum- - -
```

Figure 1. The main menu of the ECON.BA *program. Use the arrow keys to move up and down, and press* SHIFT-Q *to exit it.*

time except capital *Q* for *QUIT*. Even this command is protected because you can't inadvertently press the lower case *q* and do anything you don't want. Quitting the program requires a deliberate action of pressing *SHIFT* and *Q* at the same time. A nicety that is left out is the disabling of the *BREAK* key and the label keys. You may insert those if you like.

To exit the program, press *SHIFT-Q*. This allows the screen to clean itself up and to restore things to the normal Model T menu when you are done. While the program is running, you may use the calculator in the Model 200 by pressing *NUM* and *GRPH* at the same time. When finished with the calculation, you must again press *NUM* and *GRPH* to get back to the *ECON* program.

If you use the number pad by depressing the *NUM* key, then you can toggle between the program and the calculator simply by pressing the *GRPH* key. This is the normal mode of using the calculator and it does not upset anything in progress. The calculator works in the top line of the Model 200 screen.

Selecting from the menu is a matter of matching the cursor with the type of problem you want to solve. The main menu selections are shown in Figure 1.

Periodic Payments of a Loan, and *Maximum Loan for given payments*, are inverse functions. Selecting the first of these brings up its appropriate screen of information, as shown in Figure 2.

```
Periodic payments of a loan
A loan or mortgage of - - - - -  0.00
The annual interest rate is - -  0.00
There are X periods per year  -  0.00
And the term in years is  - - -  0.00
Requires payments of  - - - - -  0.00
```

Figure 2. The input screen for the Periodic payments of a loan *function.*

The cursor first appears next to the top line at the right, waiting for you to enter numerical data to satisfy the question. No other keys work except *Q* (for *QUIT*), *C* (for *CLEAR*—which merely zeroes all the values and starts you at the beginning of the same type of problem again)—*M* (for *MENU*—to take you back to the original main menu)—and *BKSP* (which deletes the last numerical character you just entered).

There are no errors possible. You cannot enter anything that is not a number, a decimal point, or these command characters.

In the interest of controlling the screen, the program is limited to entries of eight characters to the left of the decimal and two characters to the right. That is, $99,999,999.99, which should be enough for most of us.

All numbers are displayed in the rounded off format of dollars and cents, but all calculations are made with the full accuracy of the numbers entered or derived. If the final answer would have been too large to display in an intelligent way, the answer is divided by one million and the prefix *M* is attached. Exponential form is too confusing for most people and takes more space on the screen than it is worth. It took a few more bytes to control this, but it keeps the program foolproof and the

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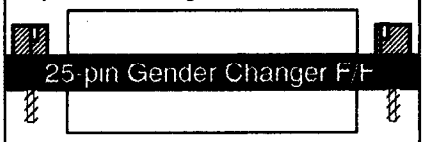

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screen clean.

The number of periods per year is ordinarily twelve (for twelve months), but sometimes you will want to find the answer based on annual, semiannual, or even daily interest rates. The interest rate is always the annual rate and it is entered as a whole number, not a decimal. The prompt suggests the *8.25* is an appropriate entry to express eight and one-fourth percent annual interest, which is correct. You can enter interest rates such as 1.2478 percent, but the display will only show 1.25.

If you do not like what you entered, you can change it. When you are done entering that data, you can move to the next item. You can continue to move the cursor with the up and down keys, just as you did at the main menu. You do not have to enter data in any particular sequence. The program does not calculate until you pressed *ENTER*. Even then, if you have not entered enough data, the program will not calculate and mislead you.

If you don't like the answer, you can reenter another figure for one or all of the items and recalculate with *ENTER*. In fact, you can iterate problems very quickly with this feature. Finding the interest rate that returns a certain amount is ordinarily an iteration problem, but you can do it easily by entering new values followed by *ENTER* until you home in on the answer. Cursor controls do not recalculate; *ENTER* does not move the cursor.

The second type of problem is the inverse of the first: finding the maximum loan you can take out if you want your payments not to exceed a certain value. Selecting that problem from the main menu brings up the screen shown in Figure 3.

```
Maximum loan for given payments
If you make payments of- - - -   0.00
The annual interest rate is- -   0.00
There are X periods per year-    0.00
And the term in years is - - -   0.00
You can pay back a loan of - -   0.00
```

Figure 3. The input screen for the Maximum loan for given payments *function.*

THE MAXIMUM WITHDRAWAL

Simple! Suppose you decide that you can afford to take $150.00 per month out of your pay to buy a new car. The dealer says you can get four years at 7.9 percent. How much of a car can you afford? Just plug the numbers into the menu and the answer pops up. You can afford $6,156.12. No more!

The dealer has only to trade your old bucket of bolts in on the new gee-whiz special for $6,156.12 cash difference and you have a deal. That is the sensible way to manage your money—not overextending yourself and getting into payments bigger than you can really handle.

The third kind of problem is arithmetically the same as the first two except the words are different. Suppose you want to live off your savings. You have a sum of $50,000 in the bank that continues to draw interest at 9 percent, but you want to draw some out of each month to buy groceries and pay the rent. How much can you draw out if you want it to last seven years? Just enter the information called for and press *ENTER*. See Figure 4 for the answer.

```
Withdrawal from a lump sum
Deposit a lump sum of- - - - -   50000.00
The annual interest rate is- -   9.50
There are X periods per year -   12.00
And the term in years is - - -   7.00
And withdraw payments of - - -   817.20
```

Figure 4. The input screen for the Withdrawal from a lump sum *function.*

The problem of "how long will the money last?" is best handled with iteration, changing the term in years entered until the withdrawal payment is what you need. The program accepts and calculates properly for decimal parts of interest periods per year and for decimal parts of years.

OTHER SAVINGS PROBLEMS

The other savings problems are just as simple and allow you to calculate:

4) How much a present lump sum deposit will grow to (future value of a lump sum).

5) How much you must put into savings now if you want it to grow to a certain amount later (lump sum needed for a future sum).

6) How much you will have later if you put in a certain amount periodically (payments needed for a future sum).

7) How much you must deposit periodically if you want it to grow to a certain value later (future value of periodic payments).

The program avoids the banker's jargon of present value, annuities, and the like, and presents the problems in plain English that commands the proper responses.

I see no great value in printing out long lists of amortization schedules for a portable program of this kind. Those things are

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available for bankers and realtors to impress you with, but their advantage is of dubious value when you really only want to see the bottom line.

Any amortization schedule you make up will be, in the end, wrong—because the timing is different. The bank does not credit your account on the day you thought it would, they make deductions for interest at strange times, make deductions from tax escrows, add interest to amounts in escrow, all at times that you have no control over. They may also be deducting life insurance premiums.

The result is that their amortization schedule is not exactly the same as yours. So why worry about it? Ask them to supply you with a copy of theirs at the end of the year. They will.

THE LISTING

The program shown in Listing 1 has a number of interesting features. First, it is compact. I have used multiple statements on a line wherever possible, and have made extensive use of the valuable *IF ... THEN ... ELSE* command of Model T *BASIC*. The listing has spaces added for clarity. You may remove them to make the program as small as possible, following the usual *BASIC* rules.

Second, the screens are displayed by *PRINT@* (MS-DOS users use *LOCATE row, column*) statements and text abbreviations, and the cursor control is done entirely through escape codes that move the cursor instantly to wherever you want it to be. This completely avoids having the screen scroll out of view because of unintentional responses.

PRINT USING statements automatically erase old information and replace it with new without having to clear the screen and repaint. Be especially careful of the trailing semicolons in the listing. They are vital to screen control.

Another interesting feature is the compression of strings. For a program that moves a lot of text strings around to present eight completely different menus, the program actually consumes little space. This is done through abbreviations and through defining characters *J* through *Y* as strings in line 1.

When the program wants to print *Deposit a lump sum of*, the *BASIC* line actually reads *PRINT Q;LS;O* with a savings in that one line of 23 bytes. This technique saves considerable space for those text strings that are repeated throughout the program.

I have tried to maximize the compression, using plain text in quotes only where an abbreviation and its definition would take more space. Semicolons are used only where absolutely necessary.

Defining the letter *L* as a string (so I don't have to continually refer to it as *L$*, also defines all the other strings that start with *L*, such as *LA$, LB$, LC$ . . . LZ$*. As a result of this, programming *PRINT QLSO* is unresolvable with semicolons. In that case, the *BASIC* interpreter cannot tell the difference between *PRINT QL SO* (two strings *QL* and *SO*) or *Q LS O* (three strings *Q, LS*, and *O*) or *Q L SO* (three strings *Q, L*, and *SO*) or *QL S O* (three strings *QL, S*, and *O*) or *Q L S O* (four strings *Q, L, S*, and *O*).

Since Model T *BASIC* recognizes only two-letter identifiers for string names, it tries to print the first two characters it comes to after a *PRINT* instruction. If those two letters have not already defined a string, then it will skip to the next instruction and print nothing. Intermediate semicolons are necessary in this case.

Sometimes I combine an abbreviation and plain text such as

Their amortization schedule is not exactly the same as yours. So what.

in *PRINT "W"T"al from "LS*, where *W* is a plain text character in quotes, *T = ithdraw*, *"al from "* is a plain text string in quotes, and *LS = lump sum*. I did this because the text represented by *T = ithdraw* in *Withdrawal from a lump sum* is also used later uncapitalized as a part of *And withdraw payments of*.

Two separate abbreviations, one for *Withdrawal* and another for *withdraw* would have taken more total memory than one definition for *ithdraw* and some plain text. (Note that here no semicolons are needed because the expression is explicit and has no redundancy.)

Finding the proper interacting words and word segments to define as string abbreviations is a great compromise, somewhat like backward anagrams that took more time than writing the rest of the program.

Consequently you must enter the program exactly as the listing shows—paying extreme care with spaces and semicolons, or you may end up with screen gaps, or words run together, or sometimes with something missing altogether. I happen to think that RAM is precious in our little machines, and anything I can do to make a program smaller is worth doing.

The program runs either on the Model 100, 102 and 200 without any changes. The Model 200 screen is larger and could also include the prompts on the bottom line for *Menu, Clear*, and *Quit* if you want to add them in. Printing is done through the normal *PRINT* key, which gives you a complete screen dump. As usual, be careful about the *NUM* lock key. This can give you the effect of an error, when in fact it is merely doing what it says it is doing.

COMPATIBILITY: TURBO ANYTHING.

Star Trek: In Search of Power

Going boldly—who knows where?

Author unknown — submitted by Richard Nehrbass

"Sulu, set path to the root directory and install the RAM disk for 320K. We're taking her out."

"Aye, sir."

"Scotty, I want full power to the megabit RAM chips and to the hard drive."

"Captain, yer overloadin' her as it is. The power supply just isn't built to take two hard drrrives."

"Power, Scotty! I want more power! Chekov, install the disk cache. Spock, any word on the millions of instructions per second?"

"Fascinating, Captain. It seems as if the turbo accelerator board is overrunning the hard drive, which, due to its poorer response time, is slowing down the system performance."

"Scotty, where is that power!?"

"Captain, I'm givin ye all she's got. It's that miserable 80986 with the 512K bit bus multiplexed down to one pin. The wee beastie has these teeny weeny little segments that can only handle so much. You'll have to install an extended memory board, do bank switching, and allocate a huge RAM disk if you want to go any faster."

"Chekov, install the EMS board."

"Yes, sir."

"Uhuru, any word from mainframe command?"

"Well, Captain, we've received several interrupts from the serial port, but because we're not multitasking, the data is just sitting there."

"Scotty, how much longer until we can shift into Unix?"

"Captain, if ye can squeeze another 60 megabytes onto that hard disk, we might have room for Unix and a couple of system utilities. Possibly an application. We'll need to increase the clock speed to 28 gigahertz. I think we can do it, but there are too many unknowns, too many bugs in the system! We'll have to do a proper shakedown."

"Spock?"

"Unix is a massive system, Captain, and the commands have to be decoded from hieroglyphics invented back in ancient times. It may be more than we can handle."

"Sulu, put in the 60 meg hard drive, install Unix for mouse drive. Prepare to go to Task speed on my signal."

"Mouse drive? . . . Aye, Captain."

"Now! Yes, Bones? What do you want?"

"Jim, you just have a little spreadsheet work, mailing labels, and some word processing. Don't you think you're overdoing it a bit?"

"Sulu?"

"Captain, she's shifting into multitasking. Task one. Task two . . . Captain, I'm losing control at the helm. It looks like we've encountered a bad sector."

"Put it on visual, Sulu."

"Captain, the VGA is not responding, sir. Shifting resolution into EGA mode."

"Spock? What's the problem?"

"Unknown, Captain. Unix seems to be rerouting all input to a null device. Trying *grep*,"—now muttering—"whatever that is."

"Scotty, what's happening with those */dev* subdirectories?"

"Captain, she canna take much morrre ... Another fifteen seconds and me math chips'll burrrn up for surrre ..."

"Scotty, we're not using the math chip."

"Sorry, Captain, but I haven't been able to say that for twenty minutes."

"Uhuru, notify mainframe command."

"Captain, either communications are breaking up, or you're dropping into Shakespearean stutter mode again."

"Captain, she canna take much morrre . . . Another fifteen seconds and me math chips'll burrrn up for surrre ..."

"Enough Scotty!"

"Captain! I'm getting a message from mainframe command... Apparently, sir, they're going to time-warp previously forgotten modes of data handling; it looks like SQL syntax is forming in the language port now."

"Scotty, quick, pop up the menu shields. This could be a trick to get us back to card punching."

"I'm sorry. Captain, but *Dbase LCXIX* doesn't have popups that work yet."

"Chekov, we need hardcopy! Fire HP LaserJet!"

"Aye, sir."

"Bones, how do I see which tasks are active?"

"I'm a doctor, Jim, not a command shell!"

"Scotty! Why can't I get a directory on this thing!!?"

"Captain, ye just canna have a mouse driven, pulldown menu system with Unix. It's like matter and antimatter, the system's too bogged down. Yer drainin me quartz crystals."

"Chekov, report."

"Captain, the little arrow is responding, but it gets to the side of the screen before the windows have a chance to move . . ."

"Spock? What's happening to our multitasking?"

"It appears as if the needs of the one are outweighing the needs of the many."

"Captain, she's not even runnin' on reserve now. We'll have to do a cold boot for surrre."

"Bones?"

"It's dead, Jim."

COMPATIBILITY: All computers.

Help! Troubleshooting: Part 2

A guide to looking for help after you've done your homework.

by Ed Dahlgren

Okay. Last month you did a bunch of troubleshooting. Maybe you even found the answer to your problem! But even if you didn't, at least you've got a better grip on the questions. Now you're ready to ask for help.

I'm going to assume that you don't have a service contract on whatever it is that's broken. They are available, you know, and I'd highly recommend buying one if you use your equipment for business or you like to use your Model 100 to play touch football with the New England Patriots.

But if you don't have a service contract, and you bring your dead computer to Radio Shack for repair, you're looking to spend some money. Not a lot, necessarily—we'll go into that next month. But you will be "shelling out." (Small DOS joke, there! Very small.)

So if you've got some time and would like to meet folks, as well as save a few bucks by not heading straight for the store with the big red sign, try checking around for help. Post your question on a bulletin board service (BBS), call your local guru at home, whatever. Even if you don't get an answer, you might find others who have the same problem or a similar one. Maybe you can compare notes and come up with the solution together.

LOOK FOR GURUS HANGING OUT

By the way, the major hangout for Model 100/200/600 gurus is CompuServe. While the advice you'll get is free, the connection time certainly isn't. That's why CompuServe Information Service is often called CI$! If you dial in at 1200 or 2400 bits per second (bps), you can basically watch a couple of dimes roll away every minute that you're connected.

It's cheaper when you call at 300 bps, but a pretty slow go. And you may have heard about CompuServe's new flat-rate service. Unfortunately this doesn't include access to what they call Forums, such as the Model 100 Special Interest Group (M100SIG).

Since this month we're talking about freebie help, you might ask around to see if someone you know has a CompuServe account. It doesn't have to be expensive to post a question and watch for replies. If you've done your homework, so that you can write a brief problem statement, and if they have experience with forums, it takes only a couple of minutes to upload a prepared message and then check every few days for replies.

It doesn't have to be expensive to post a question and watch for replies.

And while we're on the subject of BBS's, I'll mention two more. Club 100 has one in California, and then of course there's *Portable 100*'s own board in New Hampshire. Check the ads here in the magazine for their numbers.

Note that I'm not saying that these are great places to pose your "Stump the Panel" questions! I've found friendly and helpful people at both "P100" and "C100", but they ARE businesses. Dial in, hang out, and tell 'em I said hi!

CAVEAT

All right. You've checked around, stated your problem clearly but concisely, and now you've found someone who wants to help. Be thankful for such offers, but also be intelligent. If the problem takes more than a sentence or so to write out, it's going to require some knowledgeable assistance. Phrased delicately, free advice is sometimes worth less than its price.

If your helper is the sort who just upgraded to *MS-DOS 5.0* last month and now wants to tell the whole world about it, while your problem is getting your Disk/Video Interface to boot, write yourself a note for later when you may need that kind of help and then keep looking.

Also, don't post a 300-word description of your bizarre, complex hardware setup and the cold start that happens every third change of year. Write a line or two, see who responds, and then go into details with the most likely sounding prospects.

Unfortunate but true (at least in my experience): Never ask any Radio Shack sales employee anything whatsoever about a discontinued item. Think twice before asking about any product brought out more than a year ago.

Case in point: I bought an obscure and long-discontinued Tandy MS-DOS computer with a "dead hard drive." It must be dead, the manager told me, because

the light doesn't come on when you power it up! Besides, another store tested it and said so. In truth, the drive was fine but was connected to a dead controller board.

It's not necessarily their fault. They sell a wide variety of merchandise; the computer industry is cranking out new stuff as though its life depended on it (when in fact it depends on customer satisfaction, but that's another story). Many sales folks aren't very technical anyway. They often receive poor training, and their turnover is pretty high.

Just don't make the sales person's problem your problem. If you want free advice from Radio Shack, go to a store where they know you (if possible). Get the manager (if necessary, and it usually is). Ask her or him to call Technical Support on the store's nickel.

Don't do this during Christmas rush, after 4:00 P.M. Central Time, or anytime Friday afternoon or all day Monday, and you'll probably get some kind of answer. Do realize, however, that to the "tech" sitting in Fort Worth your problem is a hypothetical one because the computer isn't sitting in front of him.

It's easy to believe that Tandy—or any other manufacturer of anything at all—

You can also call Tandy Technical Support yourself.

would rather have you pay a service charge than help you for free. But think about it from the technician's point of view. Adequate problem statements are hard enough to get in person, never mind over the phone.

And if the customer has done extensive troubleshooting, the results can be extremely difficult to describe to someone else. To make it worse, techs are used to following diagnostic flow charts in service manuals, so the customer won't have done the same steps in the same order that would have been followed in the shop.

By the way, Service Manuals and Technical Reference Manuals are still available for almost any Tandy computer you'll run into, even very old ones. Sometimes only one or the other is available, but either one can be pretty helpful. On Model 100's and other small computers they cost about $15. For my 1000 SL/2 the technical manual was not quite $60.

TAKE MATTERS INTO YOUR OWN HANDS

You can also call Tandy Technical Support yourself. If you decide to make the long-distance call to Fort Worth, be sitting in front of the equipment you're calling about and have all your notes and necessary information right there. I haven't had a Tandy technician spend this much time with me yet, but if he or she asks you for the catalog number or tells you to boot the thing and try something, you want to be ready to let him or her help you. (Tandy Technical Support, 800-442-2425, Fort Worth, TX).

In any event, don't take free and/or remote advice as gospel, even when it comes from Tandy technical support people. Sometimes it just requires time, training, and precisely your hardware in front of them (or equipment configured exactly like yours) to be able to pinpoint the trouble.

F'rinstance. I know of one major computer company that offers "remote support" and does a good job. You call an 800 number and talk to an extreme expert in just the type of problem you're having. If it's about software, they've got shelves and shelves of documentation. If it's about hardware, they've got a library of every schematic drawing of every product they've ever made, plus all the equipment necessary to duplicate your setup exactly.

They'll even dial into your equipment and run diagnostics for you. Just to support this company's high-end products there are over 900 employees in a 300,000 square-foot building. Guess what? Ya gotta pay for this service.

Next month we'll talk about taking your Tandy to Tandy and paying for service. How to control costs. Keep separation time to a minimum. In short, how to manage the repair process. Would you believe "instant" repairs? All this and more in next month's *TV Guide!* Errr, I mean *Portable 100!* Watch for it!

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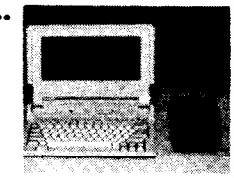

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COMPATIBILITY: Model 100, 102, 200.

The I Ching at Your Fingertips

Explore ancient Chinese philosophy with your Model 100.

by Jeffrey Green

For many centuries the Chinese have used a system of philosophy to guide them in their response to the changes in life's influences. This philosophy is set out in the book *I Ching* (pronounced "ee jing"), which is generally translated as *The Book of Changes*. Integral with the thoughts contained in this book is a system of "divination," which guides the user to the applicable part of the book for the particular circumstances under review.

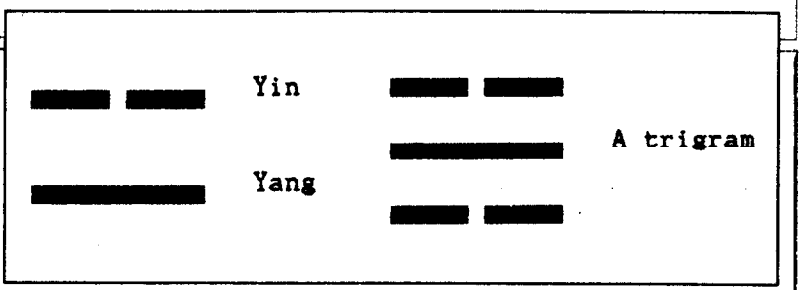


Figure 1. The Chinese I Ching is based on the two opposing elements called Yin and Yang. The basic structure of the system is the trigram, a set of three lines.

YIN AND YANG

To the Chinese philosopher the universe is in a continual state of change. These changes are influenced by the tensions set up by opposing forces—negative and positive, dark and light, cold and hot, etc. These opposing elements are exemplified in Chinese thought as Yin and Yang.

These opposing elements are symbolized by a broken line for Yin, and a solid, unbroken line for Yang.

A *trigram* is a structure consisting of three such lines stacked one on top of the other, in any particular combination. It can be seen that eight different trigrams can be constructed from the grouping of the two different lines.

Grouping two trigrams together gives a hexagram, and there are sixty-four possible hexagrams. These hexagrams are key to the interpretation of the I Ching.

Recognizing that everything is in a state of change, we must also allow change from negative to positive, from Yin to Yang.

This is allowed for in the I Ching method by what are known as *changing lines*. A Yin line changes to a Yang line, and vice versa. Of course, such a change, even in one line of a hexagram, will fundamentally change the whole hexagram. There can be any number of changing lines in a hexagram, from zero to six. A changing line is shown as a Yin or Yang line followed by a dot.

Centuries ago King Wen, founder of the Chou Dynasty (1150-249 B.C.), wrote commentaries on the interpretation of the hexagrams and arranged them in an ordered table, an order still used today.

We must also allow change from negative to positive, from Yin to Yang.

THE I CHING THROWN

An essential part of the I Ching system is a method of generating the changing or unchanging Yin or Yang lines. Originally (and still today to the purists) this system consisted of counting fifty yarrow stalks to generate the lines randomly. But any method that generates such randomness, related in some way to the thrower and the time of the throw, is a valid method. For instance, the throwing of three coins is an easy method in common use.

What I present here is a program that generates a changing or unchanging Yin or Yang line, related to who is making the enquiry, and to the time of the enquiry. The lines are built up into the initial hexagram, and if there are changing lines, the resulting hexagram is shown. The program also looks up King Wen's table and tells you the number of the hexagram that has been generated.

THE PROGRAM

The program *ICHING.BA* (see Listing 1) is designed to use as little of your Model 100 memory as possible. There are no remarks or explanations within the program and the lines have been made as long as possible to conserve memory. But this means that it is not too easy for a mere human to understand. Of course, the computer has no such problem!

The opening line 100 asks for your name and then generates a random number based on your reply. Line 110 begins by generating another random number from the time of your enquiry and then combines these two random numbers to give

```
100 DIMZ(6),L(6):CLC:PRINT@50, "WHAT IS
YOUR NAME?":INPUTN$:CLS:PRINT@((22-LEN(N
$)))/2, "I CHING THROW FOR ";N$:FORQ=1TO
1000:NEXTQ:FORS=1TOLEN(N$):N=ASC(MID$(N$
,S,1)):G=G+N:NEXTS:N=INT(G/(LEN(N$)))
110 T=VAL(RIGHT$(TIME$,2))+VAL(MID$(TIME
$,4,2)):K=2*N-T:PL=287:FORJ=1TO6:PL=PL-4
0:FORX=1TOK:R=RND(1):NEXTX:L=INT((4*R)+1
):ONLGOSUB200,210,220,230:Z(J)=L:NEXTJ:P
=256:A=1:B=2:GOSUB240
120 FORW=1TO1000:NEXTW:PRINT@140,CHR$(23
2);CHR$(232);CHR$(254):PRINT@180,CHR$(23
1);CHR$(231);CHR$(251)
130 PL=306:FORJ=1TO6:PL=PL-40
140 IFZ(J)=1ORZ(J)=4THENLETL(J)=0:GOSUB2
00:GOTO160
150 L(J)=1:GOSUB220
160 NEXTJ
170 P=274:B=4:GOSUB240
180 PRINT@120,""
190 END
200 FORW=1TO1000:NEXTW:PRINT@PL,CHR$(228
);CHR$(232);CHR$(232);CHR$(32);CHR$(232)
;CHR$(232);CHR$(227):RETURN
210 FORW=1TO1000:NEXTW:PRINT@PL,CHR$(228
);CHR$(232);CHR$(232);CHR$(32);CHR$(232)
;CHR$(232);CHR$(227);CHR$(32);CHR$(227):
RETURN
220 FORW=1TO1000:NEXTW:PRINT@PL,CHR$(228
);CHR$(232);CHR$(232);CHR$(232);CHR$(232
);CHR$(232);CHR$(227):RETURN
230 FORW=1TO1000:NEXTW:PRINT@PL,CHR$(228
);CHR$(232);CHR$(232);CHR$(232);CHR$(232
);CHR$(232);CHR$(227);CHR$(32);CHR$(227)
:RETURN
240 FORW=1TO1000:NEXTW:FORJ=1TO6
250 IFZ(J)=AORZ(J)=BTHENLETL(J)=0ELSELET
L(J)=1
260 NEXTJ
270 X=32*L(6)+16*L(5)+8*L(4)+4*L(3)+2*L(
2)+L(1):GOSUB280:PRINT@P,Y:RETURN
280 X=X+1
290 FORK=1TOX
300 READY
310 NEXTK
320 RESTORE:RETURN
330 DATA2, 24,7,19,15,36,46,11,16,51,40,
54,62,55,32,34,8,3,29,60,39,63,48,5,45,1
7,47,58,31,49,28,43,23,27,4,41,52,22,18,
26,35,21,64,38,56,30,50,14,20,42,59,61,5
3,37,57,9,12,25,6,10,33,13,44,1
```

Listing 1. ICHING.BA, *a program that generates ancient Chinese I Ching lines.*

a number from 1 to 4. This directs the program to one of the four subroutines (lines 200, 210, 220, 230) that generate the changing or unchanging Yin or Yang lines.

With appropriate delays, to make the timing more lifelike, these lines are printed on the screen (from the bottom up) to construct the initial hexagram.

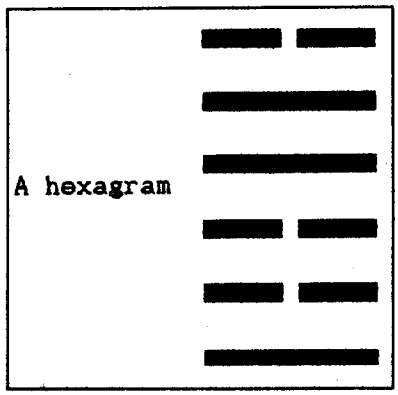


Figure 2. Two trigrams, six lines, make a hexagram.

Within these program lines are various counters to position the hexagram lines correctly on the screen. After displaying the initial hexagram the program goes to the subroutine at line 240. This routine develops a counting number Y from the lines in the hexagram and then counts through the *DATA* list to find the number in King Wen's table of the hexagram.

On *RETURN* to line 120 the screen displays an arrow to the second hexagram. Lines 130 to 160 examine the lines in the first hexagram and the screen displays the second hexagram—having altered any changing lines to their opposites.

Finally line 160 directs the program to the subroutine at line 240 to determine the number of the second hexagram.

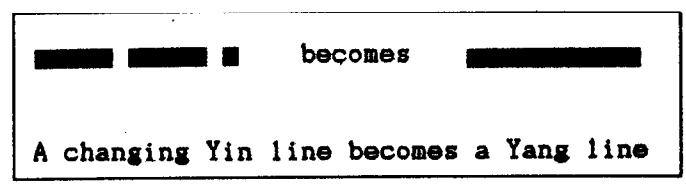


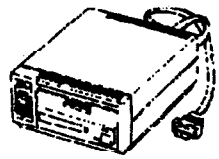
Figure 3. The power of I Ching lies in the ability for of the lines to change, to be active instead of passive. Thus, Yin can become Yang, and Yang can become Yin.

UNDERSTANDING THE HEXAGRAM

Space does not permit any explanation of the interpretation of the I Ching hexagrams here, but many books can guide you to the interpretation of your enquiry. One of the best for the beginner is R. L. Wing's *The I Ching Workbook* published by Doubleday.

The classic translation from the Chinese by Richard Wilhelm goes deeply into the meanings of the hexagrams, but is difficult for the beginner. Many other such books help explain the philosophy, which can hardly be touched on in this article. Your local library or bookstore can help you find out more about this time-honored, but always timely, subject.

PC-PDD



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Continued from page 7.

alludes to the fact in the 1100 FD, the *Desknote* ROM may be replaceable! How about a really good ROM with all the goodies (like the Model T, except with all the latest features and capabilities)? Perhaps not in my lifetime.

So, there, Nuge. An emotion dump. I still think that *Portable 100* magazine is the *very best computer magazine* on earth! Editors like you who give the readers the true value they want! Please continue and I will promise to pay attention to whatever you and the magazine need.

Bob Pigford
Newark DE

Wow! We truly appreciate your comments and we will try to work as many into use as is practical, starting with the more informative reviews (we do list RAM, screen information, compatibility, disk requirements, and other factual data, but there's always room for improvement). And readers, what do you think of Bob's suggestions? Are there any points where you would like us to start first?

-tk

TRYING TO HELP

I came to computers via amateur radio. My first computer was the M100, that I used thru an AEA232 TNU for packet, using the *TELECOM* function. But I am not a computer technician, and I am learning about how and why computers work. I do have an MS-DOS machine now, the GRIDLITE, that I purchased used, and so am now in the throws of trying to understand and use MS-DOS. I still value the M100, and am now starting to use it to run a log for the radio activity as well as a terminal for community volunteer work in disaster community training and activities.

I am also a member of the National Capital Tandy Computer Users Group, which includes a small, but hard core, group of M100 users. There is a 100 Conference on the clubs BBS, as well as other groups. And we are happy to see the new life coming into the *Portable 100*, and we are hoping that we can get some additional subscribers.

I appreciate the articles for both the expansion use of the M100, as well as the other models, and for the "upgrading" in MS-DOS. But we want you to know that there are a group of us that appreciate the range of the publication, and are doing what we can to support both by subscription, and also through the advertisers.

I hope that gives a little idea of how some readers here view your work.

John Muller
Kensington MD

TANDY 102 IS MOST VALUABLE

I just read February Input/Output "Not So Cherry News" about the gentleman who couldn't find value in the 102. A lot of what he said is true, so for him the more powerful MS-DOS machine fits his needs better and becomes a better value. I personally own half a dozen computers and I use them for different tasks, from remote automatic alarm system hardware maintenance to typing this letter.

My most valuable machine is the Tandy 102 because I earn a living with it, and that's how I purchased the other big machines that support the 102. I'm in the access control and alarm business and daily use the 102 to program phone systems, access control devices, and alarm systems. The 102 out of the box is what I use and if it broke down tomorrow I would have to buy a replacement the same day.

Arlie Morris
Chino, CA

Do you plan on any articles concerning this model?

SUPPORT FOR THE 1400 LT

I receive your magazine regularly, however, I own a 1400 LT Tandy computer and I do not see any reference in your publication to that model.

I am interested in adding a hard drive. It has two 360 ports but your publication seems to deal with other models.

Do you plan on any articles concerning this model?

M. Andrew Dwyer, Jr.
Troy, NY

We have regularly run reviews of equipment and software for the 1400 series computers, including several hard drive attachments, both internal and external. We run articles on the various machines as frequently as we receive them. Right now, we have someone working on a review of MS-DOS 5.0, as run on a 1400. When he finishes, we will publish the article. Plus, if you are interested, we have an article index ($9.00) that lists all the issues with articles specifically about the 1400.

-tk

A GODSEND

I just took some time to read Input/Output in the February 1992 issue of the *Portable 100* magazine. In a letter from Paul M. Bucaol is the statement, "It has no future." This was said in 1992 about a computer that came on the market in 1983, nine years previously. That comment particularly annoyed me.

I recently had a stroke which seriously affected my speech and my handwriting, so I depend on my Tandy 102 to be able to communicate (this letter, by the way, is typed on my 102). Without a computer, it would be literally impossible for me to communicate. Before my stroke I worked as an electronic technician in our headquarters engineering department and provided advice to technicians across Canada for our company. I previously used a Model 100 at work. Right now I use a *Super ROM* in my 102 and for me, it is a Godsend.

I don't pretend the 102 doesn't have limitations but it is my constant companion. It has given me a lease on life that I know many people can't really appreciate.

Herb Klassen
Mississauga, Ontario, Canada

Thank you for taking the time to write us.

-tk

IT WAS NOTHING

Please accept my gratitude for the information that you provided me regarding the use of the CHR$(0). I am quite sure that you saved me an inordinate amount of time that I would have spent looking for a solution that wasn't possible.

As I indicated, I am interested in using graphics with the M100. The graphics here have been prepared on the Commodore 128 with *RUN*'s *RUNPaint* program and then reduced to numbers that could be sent to an Epson equivalent (C.ITOH Jr.) printer. While it is a pain to make the conversion, I would hope that at least letterheads might be of value in dressing up the correspondence with the M100.

This is being written on a Kyotronic 85. The word-processor program is modified *PRINT.BA* from Radio Shack's *Portable Computing with the Model 100* (p.125).

Hugh McMenamin
Peoria, IL

HERE'S YOUR ANSWER, KOACH

In response to Roger Koach's letter in the February issue: the *Portable Program Review* was published by Camden Communications. P. O. Box 250, Highland Mill, Camden, ME 04843. I don't know whether it still is.

My own question is whether there is a

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Picture this. *Disk*+ comes to you on a Snap-in ROM and a diskette for your desktop. You take a quarter and open the little compartment on the back of your Model 100. Then you just press the ROM into the socket. *Disk*+ appears on your main menu just like a built-in.

You connect your Model 100 to your other computer using an RS232 cable (available from TMNE for only $20).

You just place the *Disk*+ diskette into the desktop's drive and turn on the computer. It powers up automatically and says "awaiting command" on your desktop's screen. Then you just put the widebar cursor on the Model 100 main menu on *Disk*+ and press ENTER. You are shown your RAM files arranged just like the main menu.

To save a file to your other system's disk drive, you just move the widebar cursor to the file you want to save and press ENTER. It is saved instantly with no further action.

To look at the disk directory, you just press a function key on your Model 100. You see immediately the disk directory on your Model 100 screen, and it is arranged just like your Model 100's main menu.

To load a file from the diskette to your Model 100, you just move the widebar cursor to the file and press ENTER. The file is transferred to your Model 100's RAM instantly. You can press F8 and go back to the main menu, and the file you loaded from diskette is there, ready to use.

It is so nice to be able to keep your documents, programs (both BASIC and machine code) and *Lucid* spreadsheet files on the diskette, and bring them back when you need them. All files are ready to run or use with no changes or protocol by you.

If you have access to a desktop computer and don't have *Disk*+, then evidently we have done a poor job telling you about it.

All files and programs that you load or save, go over and come back exactly as they are supposed to be because of full error checking. This guaranteed integrity is really a comfort. *Disk*+ is wonderful in so many other ways. For example, you can do a "save all" of all your RAM files with just a touch of a function key. That group of files is saved on the diskette under a single filename with a .SD (for subdirectory) extension. Any time you want, you can bring back all those files at once, or just one or two if you like, again with one-button ease.

Disk+ takes up no RAM. That's zero bytes either for storing the program or for operating overhead.

What really excites most *Disk*+ users is text file cross compatibility. Your Model 100's text files are usable on your desktop computer, and your desktop's text files become Model 100 text files.

This means you can write something on your Model 100, and with *Disk*+ transfer it instantly to your desktop and start using it right away on your bigger computer. Or the way we like to work is to type in a document on the desktop computer and then transfer it to our Model 100 with *Disk*+. Then we print out the document, beautifully formatted, using WRITE ROM.

Disk+ works with just about every micro sold, from IBM PC and its clones, to all Radio Shack computers (yes, all), to Apple II, Kaypro, Epson and most CPM. Just ask us. More than likely, your computer is supported.

Incidentally, hundreds of Model 100 owners have gone to their Radio Shack stores and bought a color computer because it is so low priced, and with *Disk*+ they have an inexpensive disk drive.

And if that weren't enough, how about this: *Disk*+ also provides cross-compatibility between different computers like IBM, Apple or the Model 4 using the Model 100 as the intermediary device. Quite a feature!

The snap-in ROM is really great because you can use other ROMs like *Lucid* or WRITE ROM. They snap in and out as easily as an Atari game cartridge and you never lose your files in RAM.

Anyone who ever uses *Disk*+ simply can't do without it. But so many times we have had new users call us and say, "Wow! I had no idea when I ordered it that *Disk*+ would be so fantastic. I just couldn't believe that I could use my desktop computer's disk drive with my Model 100 just like it is another main menu."

That's why we sell *Disk*+ on a thirty-day trial. If you aren't completely satisfied, return it within thirty days for a full refund. Priced at $149.95 on Snap-in ROM. MasterCard, Visa or COD.

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way to modify any of the *XMODEM* programs for the Mod 100 so that they can be used at 1200 BAUD with an external modem.

Trevor Robinson
Amherst, MA

Altering the XMODEM *programs can be done, but only the authors of those programs really know where to make the modifications. Well pass your request on to them and see what happens.*

-tk

A HAPPY READER

Well, I posted my first letter on the day the April *Portable 100* arrived in the mail. While I have not finished the entire issue, I like what I see. From your editorial and the new columns it is quite clear that *Portable 100*'s direction is a good one. Many of the ideas that I wanted to see happen have already taken place. Bravo!!

I have just purchased an extRAM from EME and in opening the back found that my fairly new M102 does not have socketed RAM chips. I figured out a short term fix until I can install a socket, but gave a call to EME. I had a nice chat with Dr. Allen. His fix was the same as I had in mind. He did say that the new and improved software is about ready to ship. Dr. Allen is aware that it was EME's ads and Stan Wong's review in *Portable 100* that sold his product to me.

I have started a file of notes and ideas concerning ham radio and the M100. I will print and mail it whenever I think that what I have might be worth 29 cents!

Tim Moore
Juneau, Alaska

OOPS

I just used your information in your "Poking...BASIC" article in February '92 *Portable 100* on my old model 100 with 32K and *Ultimate ROM II*.

Very glad to have a way to recover from data loss. Unfortunately, shortly after opening *FIND.DO* and then initializing *Ultimate ROM II* (with *CALL 63013,1*), my screen went blank! I have tried a cold boot and verbal threats but to no avail.

Is this something I did by *PEEK*ing and then initializing *Ultimate ROM II*? Or did my computer (screen) finally just "give up the ghost."

M. W. Servantius
Washington DC

The recovery doesn't hurt anything. What probably happened is that whatever caused your original data loss was still lurking in the background. Initializing Ultimate ROM II *just triggered it. Your best bet is to cold start the computer again, rerun the recovery program, and save your data to tape or disk. Next, turn off the memory switch on the bottom of your computer and wait for an hour. Now turn it back on and see if the problem persists.*

If the problem is still there, then clean the contacts on the Ultimate ROM II *chip by removing it from the computer and rubbing the copper contacts with cotton swabs and regular rubbing alcohol. That should cure your problem.*

-tk

MORE ON WORDSTAR

I read your article about *WordStar* in the September issue with great interest. I have been using *WordStar* version 5.0 on my laptop for about six months, and it is great. Two comments:

1. Disk space: The only files that you <u>really</u> need to run *WordStar* are *WS.EXE* and *WSMSGS.OVR*. These files together take up less than 180K of disk space. You will get some messages about missing overlay files, but the program runs fine. I travel with just these two files. Then, when I get back to my "mainframe", I use the full version of *WordStar* to spell-check and print my documents.

2. You mention using *WordStar* with the *Microsoft BallPoint* mouse. Is there some special driver or installation that I need to get my ATI mouse to work? (It is Microsoft compatible.)

Eric Schneck
New York, NY

If the mouse is Microsoft Mouse compatible, then you should not need any special drivers outside of the Microsoft Mouse driver. And that might be your problem. While your mouse may be Microsoft compatible (that is, you can use it with the Microsoft Mouse driver), I doubt that the driver software supplied with the mouse looks like the Microsoft Mouse driver to other software. You should call the WordStar *technical support and ask for help.*

-tk

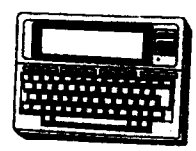
IT NEVER MADE IT

I have January 1992 *Portable 100* in hand. I have just read your column in which you note "- a special insert from Club 100 - Their entire catalog!" Mine must have fallen out or have I missed it? I have a IBM-DOS desktop but still use my Model T when I go on the road or at the Whitman College Library once a week as a volunteer. I enjoy your magazine very much.

H. Vance Orchard
Walla Walla, Wa 99362

Your replacement is on its way. Anyone else who did not get the catalog should drop us a postcard and we will send you a replacement, too.

-tk



COMPATIBILITY: Model 100, 102, 200.

Dealing with Duplication

BACOMB.BA *helps you sort out not-so-identical twin BASIC files.*

by Ken Arbuckle

Whether you store files on diskettes or on cassettes, you'll eventually run across duplicate files. Cassette tapes seem to lend themselves to this problem; usually it's easier to save a new copy of a file to tape than it is to find and replace the old one.

FLOPPY.CO, the disk operating system that comes with the Tandy Portable Disk Drive, does a little better. You can find files more easily, and you can't save two files with the same name to the same disk bank. But nothing prevents you from saving the same file name to different disks, or saving the same file with a slightly different name.

This can easily lead to problems when working with *BASIC* programs. You can save multiple copies of a program for any of several reasons. You may be developing a new program, or attempting to customize or streamline an existing one. In any case, caution and common sense dictate keeping a copy of the original program until you are sure the newer version works as planned. The result is that you end up with at least two versions of the same *BASIC* program.

The result is that you end up with at least two versions of the same *BASIC* program.

It's easy to have more. I recently discovered that I had, on various tapes and diskettes, six copies of a print formatting program. Some were duplications, I was sure; some were not. The problem was that I wasn't certain which ones were which.

It often helps to know when a file was saved. Since the Model 100 does not perform time/date stamping, and since it limits file names to six letters, the responsibility for annotation is placed on the user. The careful user puts comments (*REM*ark lines) in every version of a *BASIC* file, including the date last revised and any changes.

```
10 'BACOMB.ba (combine Program files wit
hout merging dissimilar lines).(Ken Arbu
ckle,03/92,Portable 100 Magazine)
20 MAXFILES=3:CLEAR 500
30 CLS:PRINT "Files must be Basic Progra
ms in ASCII format."
40 FOR I=-1617 TO -1400 STEP 11:IF PEEK(
I)=192 THEN FOR J=I+3 TO I+8:PRINT CHR$(
PEEK(J));:NEXT:PRINT SPACE$(4);
41 NEXT:PRINT
50 FOR I=1 TO 2
60 PRINT "Program #";I:INPUT PG$
70 P=INSTR(1,PG$,"."):IF P THEN PG$=LEFT
$(PG$,P-1)
80 P$(I)=PG$+".DO"
90 NEXT
110 OPEN P$(1) FOR INPUT AS 1
120 OPEN P$(2) FOR INPUT AS 2
130 OPEN"Ram:bacmb.do" FOR APPEND AS 3
131 PRINT#3,"========";P$(1);" + ";P$(2)
;"========"
200 GOSUB 1000:GOSUB 2000
300 REM ——>one file completed<——
310 IF A$=""THEN PRINT#3,"*(B) ";B$:B$="
":GOSUB 2000:IF B$="" THEN GOTO 3000 ELS
E GOTO 310
320 IF B$=""THEN PRINT#3,"*(A) ";A$:A$="
":GOSUB 1000:GOTO 310
400 REM ——>both files open <——
410 AI=INSTR(1,A$," "):NA$=LEFT$(A$,AI)
420 BI=INSTR(1,B$," "):NB$=LEFT$(B$,BI)
510 IF VAL(NA$)<VAL(NB$) THEN PRINT#3,"*
*(A) ";A$:A$="":GOSUB 1000:GOTO 310
520 IF VAL(NB$)<VAL(NA$) THEN PRINT#3,"*
*(B) ";B$:B$="":GOSUB 2000:GOTO 310
549 REM ——>matching line numbers<——
550 IF A$=B$ THEN PRINT#3,A$:A$="":B$=""
 ELSE PRINT#3,"A*** ";A$:PRINT#3,"B*** "
;B$:A$="":B$=""
560 GOTO 200
999 REM ——>next line:file #1<——
1000 PRINT"a";:IF FA THEN RETURN ELSE LI
NE INPUT #1,A$
1001 IF EOF(1) THEN FA=1:CLOSE 1
1002 RETURN
```

Continued

Listing 1. BACOMB.BA. *This Model 100 program compares and collates two* BASIC *files, allowing you to find the latest version of your programs.*

Sardine: The only electronic dictionary for Model 100/102/200/NEC8201 computers. Contains the 33,000 word Random House Pocket Dictionary.

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```
1999 REM —>next line:file #2<—
2000 PRINT"b";:IF FB THEN RETURN ELSE LI
NE INPUT #2,B$
2001 IF EOF(2) THEN FB=2:CLOSE 2
2002 RETURN
2999 REM —>wrap it up<—
3000 PRINT#3,"A=";P$(1)," B=";P$(2),DATE
$,TIME$:BEEP
3010 PRINT:INPUT "KILL Input (.Do) Files
";Y$:IF Y$="Y" OR Y$="y" THEN KILL P$(1)
:KILL P$(2)
3020 MENU
```

End of listing 1.

In a perfect world, this would be enough. But—in a perfect world—you would have no sudden inspirations, no last-minute addenda, no interruptions. In a perfect world, that brief comment, which at the time seemed so lucid, would not, several months later, seem so cryptic.

Thus the result of our imperfect world: two (or more) maddeningly similar, but not identical files. And one disconcerted user trying to recall the difference between *MYPRG2* and *MYPRGB*.

IN SEARCH OF A SOLUTION

One solution, of course, would be to print both files and compare the printouts line by line. Unless your listings are very short (or you have the patience of an accountant), you probably use this method only as a last resort. This is the type of tedious task that should be relegated to the machine.

But how can this be done? There is no compare command available to us in Model 100 *BASIC*. This is no great loss, however; the MS-DOS compare command (*COMP*) is of limited usefulness. It tells us only whether two files are identical, and it lists the differences in hexadecimal notation(!). Besides, it doesn't compare files of different sizes. Surely we can do better than that.

Another possibility, the *MERGE* command of M100 *BASIC* also has its limitations. In case of identical line numbers, the second program's line always overwrites the first. But if the two programs are not extremely similar, the resulting hybrid can be more confusing than helpful.

To allow more flexibility and control in comparing two similar *BASIC* listings, I put together the program *BACOMB.BA*.

If RAM memory is at a premium, you can change *BACOMB.BA* to be more miserly.

AMALGAMATING *BASIC*

BACOMB.BA (Listing 1) does not blindly merge the two versions of a *BASIC* listing. Instead, it compares and collates them.

A line identical in both versions is merely printed as is. A line that exists only in one listing is printed with an identifier to tell which listing it came from. If the two listings have the same line number, but the two lines are not identical, then both lines are printed, with each identified as to source.

The result is a composite listing, showing all similarities and differences in the two source listings.

You may then edit this combined listing (a *.DO* file) using all the built-in *TEXT* editor functions to eliminate duplicate line numbers. To locate lines needing attention, do a *Find (F1)* for the string **. You can eliminate small discrepancies between otherwise identical lines. You can delete unneeded lines (or turn them into *REM*arks). You can deal with wildly differing lines in whatever way you choose.

Once you have the program edited to your satisfaction, you can turn it back into a *BASIC* program file. First you must make sure that nothing is to the left of the line number in each line. (Starting at the top of the file and doing another *Find (F1)* for ** should help you find anything you may have missed.)

Next, delete (or turn into *REM* lines) the heading at the start of the file, and the lines at the end that identify the input programs and tell the time and date. Be careful to avoid creating duplicate line numbers.

Finally, go back to the main menu and go into *BASIC*. Load the *.DO* file; then *SAVE* it as a *.BA* file. (A *?DS error* when you attempt to load the *.DO* file into *BASIC* means that you have a line without a line number.) Be sure that your new file contains at least one *REM*ark line, with the date and a helpful comment or two.

BACOMB.BA works only on *BASIC* listings saved in ASCII (*.DO*) format. *BACOMB.BA* gives you the option of *KILL*ing these input files once the program is complete. You may find this desirable to free up memory space. Keep the original disk or cassette files, of course, until you are confident of the new combined file that you have created.

BACOMB.BA works only on files that are numbered alike. If you have renumbered one version of the program, *BACOMB* does not recognize otherwise identical lines.

If you leave out all the *REM* lines in Listing 1 with an arrow

(>) in them (lines 300, 400, 549, 999, 2999), *BACOMB.BA* takes up about 1,125 bytes. Because it deals only with two lines at a time, it requires a very small amount of overhead to run. Keep in mind, however, that this program creates a new file that will be at least as big as the larger of the two input files.

AN ALTERNATE VERSION: *BACOMP.BA*

If RAM memory is at a premium, you can change *BACOMB.BA* to be more miserly. Make the changes shown in Listing 2, and *SAVE* this version of the program as *BACOMP.BA*. It creates a *.DO* output file (*BADIFF.DO*) containing only those lines that differ in the two input programs.

```
10 'BACOMP.Ba (Compare BASIC files; pri
nt dissimilar lines. K.Arbuckle, Portabl
e 100 Mag.,03/92).
130 Open "RAM:BADIFF.DO" FOR APPEND AS 3
140 Print#3,"Differing Lines:"
550 IF A$=B$ THEN A$="":B$="" ELSE PRINT
#3,"A***";A$:PRINT#3,"B*** ";B$:A$="":B$
=""
```

Listing 2. BACOMP.BA. *Make these changes to* BACOMB.BA *(see Listing 1) to make it more miserly. This version compares only the lines that have been changed in two* BASIC *files.*

HOW IT WORKS

Lines 40-41 show *.DO* files (for the Model 200, use -3402 to -2895 in the *PEEK* statement).

Lines 50-90 accept the program names and ensure that each has a *.DO* suffix.

Lines 110-150 open the input files.

Lines 1000-2002 handle the input from our source files.

Lines 310-320 check to see if you have reached the end of one or both of the source listings.

Lines 410-650 perform the actual comparison of lines: Lines 410 and 420 extract the line number of each of the current lines. Lines 510 and 520 compare the line numbers. If they do not match, the lower numbered line is printed, and the next line is acquired for comparison. Line 550 examines lines with the same line number. If they are at all different, both lines are printed.

Because it deals only with two lines at a time, it requires a very small amount of overhead to run.

Line 3000 adds the input file names to the output file, plus the date and time, when there are no lines left in either file.

REFERENCES

For the routine for displaying only *.BA* or only *.DO* files (lines 40-41) see "The Last Lister," by Larry McInteer, (Nov. 1987, pp. 24-28). See also "The Beginning and the Ending," by Carl Oppedahl, (Dec. 1987, p. 27).

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It's Springtime for Super ROM in Peterborough!

We take a slight detour on our Documental Journey.

by Mike Nugent

Wow, it's April already! You've worked (or played, depending on your point of view) very hard these past few months. At times, you've handled some pretty technical stuff in the process of taking more complete command of *Write ROM* and *Super ROM*. And it's paid off. With your increased knowledge and sharper skills, you're producing much better looking letterheads and documents. Congratulations!

It's going to get a bit more "hairy" now, as we learn to tap even more fully the power of *Write ROM*, *Super ROM*, and your printer. You'll need to be at your best, your freshest, charged up and ready. (And so will I, in order to explain it all!) So let's do what college students do this time of year: take a Spring Break. Relax. Unwind. Decompress. Then we'll be rested and ready to tackle the final leg of our Documental Journey.

Of course, since we can't all flock to Fort Lauderdale and party non-stop (Rats!) we'll just have to content ourselves with something less ... er, demanding. How about a few tips and a helpful utility?

ALL THE NEWS THAT'S FIT TO PASTE

You *Lucid* spreadsheet users already know you can cut and paste formulas within and between spreadsheets. What you may not know is how *Lucid* accomplishes this. The secret: *Lucid* has its own invisible paste buffer.

This is not the regular paste buffer used by the Model T's *TEXT* program, but a separate invisible *file* created by *Lucid* to temporarily store the data when you use *Cut* or *Copy* within a spreadsheet. This machine language (*.CO*) file, named *4 PCS.G*, doesn't appear on the Model T's menu. It's a very clever and effective way to accomplish the task.

Though it rarely interferes with normal day to day operation of the Model T, it can have noticeable effects. For one, it uses a directory slot. If it's ever appeared that you had room on the menu for one more file, but the machine refused to create it, *4 PCS.G* might have been the reason. You couldn't see it from the menu, but that last directory slot was already filled.

```
 0 REM K4PCS.G 2/5/85 R. Perry 75665,1045
  Kills Lucid Paste buffer if present els
e beeps
1 DEFINTA-Z:FORI=-1694TO-1408STEP11:IF(P
EEK(I)AND247)<>160THENNEXT:BEEPELSERESTO
RE2:FORJ=3TO10:READN:IFPEEK(I+J)<>NTHENJ
=11:NEXT:NEXTELSENEXT:POKEI+3,75:POKEI+1
0,75:KILL"K4 PCS.GK"
2 MENU:DATA0,52,32,80,67,83,71,0
```

Listing 1. K4PCSG.BA completely deletes the Lucid's invisible paste buffer, freeing up your RAM and directory space, and preventing heart attacks among LapDOS users.

One not so nice thing is that, once created, it never goes away.

Another effect is that, since it's a file, it uses RAM. Like *TEXT*'s paste buffer, *Lucid*'s *4 PCS.G* always contains whatever data was last cut or copied to it, and therefore it's size depends on the amount of data cut or copied. If you've ever had less free memory available than expected, and you knew it wasn't in *TEXT*'s paste buffer, maybe some of the "missing" RAM was actually spreadsheet data hiding in *4 PCS.G*.

PROBLEMS—SOLUTIONS

One nice thing about *4 PCS.G* is that it's not created (so doesn't use directory or RAM space) until needed, that is, until you do a *Cut* or *Copy* within the spreadsheet. One not so nice thing is that, once created, it never goes away. And that's where you can have some problems.

Problem #1: The RAM consumed by *4 PCS.G* is tied up, unavailable for any other purpose except to be pasted into a spreadsheet.

This is easily cured, just as with *TEXT*'s paste buffer. To empty *TEXT*'s paste buffer, simply enter a text (*.DO*) file, press *F7* (*Sel*) followed immediately by *F6* (*Cut*) or *F5* (*Copy*). Existing data in the buffer is deleted, and the new data—consisting of nothing at all, since you didn't actually select any text—becomes the new contents of the buffer. You've just freed up the RAM the old buffer data had been using.

You clear *Lucid*'s *4 PCS.G* the same

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way. Enter a spreadsheet, then press *F7* followed immediately by *F6* or *F5*. The existing data in the buffer gets replaced by the "nothing" you just selected, thus freeing up the RAM the old data had occupied.

Problem #2: Even with *4 PCS.G* cleared to its minimum size (only a few bytes), it still uses a directory slot. Most often, that's not a problem, but if you really need the space for one more file, *4 PCS.G* has got to go.

Problem #3: This is a bigger problem, but only for users of *LapDOS II*, a program that lets you transfer files between Model T's and PC compatible computers.

So to kill it, we'll need some abnormal means.

Something in the way *LapDOS* was written prevents it from properly "seeing" *4 PCS.G*. When *LapDOS* encounters *4 PCS.G* while reading the Model T's directory, it thinks it's found all the valid Model T files and quits looking for more. So it only reports files that precede *4 PCS.G* in the Model T directory. Files following *4 PCS.G* are not found, so according to *LapDOS*, they don't exist. If you don't know what's going on, it can be quite unsettling to think that some of your Model T files have vanished!

The solution to both problems #2 and #3 is to kill *4 PCS.G*, to completely delete it from the directory. In addition to freeing up RAM, it also frees up the directory slot and avoids confusing *LapDOS* (which prevents the *LapDOS* user from having a heart attack!).

K4PCSG TO THE RESCUE

4 PCS.G was so named for a number of reasons, the main one being protection. To function properly, *4 PCS.G* must never accidentally be killed or renamed. Since Model 100 *BASIC* deems *4 PCS.G* an illegal filename, it's protected from deletion, renaming, or tampering by any normal means. So to kill it, we'll need some abnormal means.

The short program *K4PCSG.BA* (Listing 1) provides those means. This handy little utility finds *4 PCS.G* in the Model T's directory, renames it to *K4 PCS.GK* (which *BASIC* considers valid, and then zaps it. If the paste buffer doesn't exist, the program simply beeps and returns to the menu.

To use it, type in the listing (taking special care in line 1 to keep the space in the new name *"K4 PCSG"*), save it as *K4PCSG.BA* or any name you prefer. Then run it whenever you want or need to kill *Lucid*'s paste buffer—especially before using *LapDOS II*.

I'VE GOT A DATE WITH APRIL

Well, that's our little detour. Enjoy your break, rest up, and be ready to dig in again next semester—er, I mean, month. And if you happen to make it to Fort Lauderdale, send me a postcard. Catch ya!

Version 5.00 of *AS-EASY-AS*

The new version of *AS-EASY-AS* has:

* EMS and Virtual Memory support to accommodate much larger worksheets, even on XT-type computers, without expanded memory.

* Print preview mode, complete with ehaders, footers, pagebreaks, etc. View your pages with embedded graphs, at 100% or 200% magnification.

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* New Macro commands for powerful direct ASCII file I/O and *FOR LOOP* structures

* Completely revised user options installation interface, with more information stored in the user configuration file

These features are in addition to what was already available in Version 4.00 (File Linking, Spreadsheet Auditing, Macro Recording, Matrix Operations, X-Y Regression Analysis, Goalseeking, Sorting, a Full Macro Programming Language, Text Search/Replace, Database operations, dBASE file Import/Export capabilities, and much more).

For more information, contact TRIUS, INC, 231 Sutton Street, Suite 2D-3, P. O. Box 249, North Andover, MA 01845-1639. (508-794-9377). *Or circle 64 on reader service card.*

Rhino AC-39 Case Provides Maximum Protection; Smallest Size For Portable Office Equipment

Designed for the on-the-go executive whose main concern is to insure that his or her portable computer equipment, software programs, and accessories function properly out of the office, Rhino computer cases combine the superior protection of a hard case, with soft-case design.

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As the newer computer equipment becomes smaller and smaller, the Rhino AC-39 is the ideal compact laptop case, since it is the perfect size for most laptops, faxes and all the notebook computers. The AC-39 comes with numerous organizer pockets for papers, diskettes, pens, business cards, etc., which makes Rhino the ideal portable equipment carrying cases for today's executive. This special organizer section may be removed for added user convenience.

In addition to computer cases, Innovative Manufacturing Corp. also produces a wide range of protective cases for equipment used by the mobile business executive, including organizers, monitors, fax machines, printers, and cellular phones.

For more information, contact Russell Baum, Innovative Manufacturing Corp., 3730 N.W. 82nd Street, Miami, FL 33147, (305) 836-1035. *Or circle 61 on reader service card.*

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Practical Peripherals will include *CheckFree* bill payment software and one month of free service with all new modem purchases.

CheckFree, electronic bill payment system can process payments through virtually any financial institution. It utilizes the U.S. Federal Reserve System to post payments, the same system that clears checks for banks nationwide. This system allows its users to pay almost any company or individual in the U.S. without ever writing a paper check.

CheckFree can manage all bookkeeping functions. It provides users with an automated checking account register that is updated each time a *CheckFree* transaction is transmitted. It can also be programed to pay regular fixed payments for the user, such as rent or mortgage payments. In addition, *CheckFree* provides it users with complete expense and budget reports to help manage finances. *CheckFree* also provides legal, hard copy receipts (for tax and other purposes) for all payments made using the system.

The DOS version of *CheckFree* can export to *TaxCut* and any spreadsheet compatible with *Lotus 1-2-3*. The Macintosh version exports to *MacInTax* and *Excel*. In addition, it is also designed to be more secure than conventional checking restricting access through an electronic 4-digit Personal Security Code.

The free *CheckFree* software package and the first month of service represent a $29.95 value. Service thereafter is $9.95 per month for up to 20 payments and $3.50 per additional ten payments, or any portion thereof.

For further information contact Practical Peripherals, Inc., 31245 La Baya Drive, Westlake Village, CA 91362. (818) 706-0333. *Or circle 63 on reader service card.*

U.S. Robotics Enhances Worldport Line; No Price Increase

U.S. Robotics, Inc. has made major enhancements to its most popular WorldPort portable modems. The enhancements include the addition of MNP 5 data compression to the WorldPort 9600 V.32, and CCITT V.42bis error correction and data compression to the WorldPort 2400 and WorldPort 2496 products. Shipping in November, there is no price increase on the products.

The addition of MNP 5 to the WorldPort 9600 V.32 boosts theoretical throughput to 19,200 bps. Developed in 1990, the WorldPort 9600 V.32 is the first portable modem available with awide range of advanced features like LEDs and auto-dial/auto-answer and is as robust as any desktop modem.

The WorldPort 2496 fax/data modem and the 2496i-TD internal fax/data modem now include CCITT V.42bis error correction and data compression. These features increase both the WorldPort 2496 and the WorldPort 2496i-TD's throughput to 9600 bps, which is four times faster than a 2400 bps modem.

Software Enhancement

The communication software bundled with the WorldPort 2496 and the 2496i-TD now requires 60 percent less memory. The new, smaller background TSR (terminate and stay resident) program, which directs the sending and receiving offaxes, frees memory for other applications. A software upgrade path will be available to current WorldPort 2496 and WorldPort 2496i-TD owners when the products ship.

WorldPort portables are battery

The new portable controller/scanner/printer from prints color data from computer workstations.

New Portable Digital Controller Allows Kodak Coloredge Copier To Function As Scanner, Printers

The Fiery controller is a digital continuous tone print controller that enables users to output color data and image files from computer workstations. The fiery controller is an Adobe PostScript raster image processor (RIP) supporting applications that output the PostScript page description languaage.

When this enhancement, both the Kodak ColorEdge 1550 and Kodak ColorEdge 1525 copiers become digital printers. Capabilities for the ColorEdge copier/printer include producing direct hard copy output for presentation graphics, training manuals and client concept proofs for advertising materials.

Kodak plans to make the Fiery controller available to customers in the United States and Canada beginning mid-year 1992 with a limited geographic rollout.

The controller is expected to have a list price of approximately $35,000.

With the Fiery controller, the ColorEdge 1550 and 1525 copiers operate as a printer and scanner, as well as a copier. And with optional wheels, it can be moved from location to location.

For more information about Kodak Office Imaging products, customers may call Kodak's Customer Information Center at 1-800-255-3434.

BUGBAK Software Exclusively for the Tandy 102

Remember your first date? No, not the night you threw up on your 8th grade sweetheart at the dance, but the "January 01, 1900" on the screen of your brand new Model 100. Remember how you set it to the current date? And how one day, for no apparent reason, it suddenly became next year? That's right—your first encounter with the notorious Model 100 "*DATE$* bug!" You spent a lot of time and effort finding ways to fix it, didn't you? Ain't it a shame your new Tandy 102 doesn't need those fixes you worked so hard to get? What a waste!

Now, thanks to *BUGBAK*, your Tandy 102 can have the same *DATE$* bug that won the hearts of Model 100 owners the world over. Re-live the pest—er, past—as your 102 plays "musical years" like a pro. Dust off those obsolete machine language utilities and put them back into service. Reprogram your *F8* key to say *RUN "DATE"* once again, just as it did in the golden days of the M100. And best of all, regain that glorious feeling of mastery over your computer (and superiority over the manufacturer).

BUGBAK is a breeze to install. No wiring. No soldering. It's 100 percent machine language software. Just run the initialization program once, following the simple step-by-step instructions in the 430-page user manual. Then sit back and see how time flies!

BUGBAK is available on cassette or disk (ROM version available soon) for only $149.95 (small bills, please) plus $2 shipping and mishandling. MC/Visa orders welcome (send card with order). Please specify IQ when ordering.

To order, or for more information, write to Extremely, Ltd., P.O. Box 372, Peterborough, NH 03458. (Nostalgia buffs: Ask about our 8K Memory Compression RAM Modules. Makes your 32K machine act like 8K! Completely compatible with *BUGBAK*.)

operated, and therefore, do not drain power from a laptp nor are they reliant on power from AC outlets or phone lines.

Current prices are: WorldPort 9600 V.32, $699; WorldPort 2496, $499; WorldPort 2400 V.42bis, $349; WorldPort 2496i V.42bis, $499; WorldPort 2405i V.42bis, $299. For more information, contact U.S. Robotics, Inc., 800 North McCormick Blvd, Skokie, IL 60076, (708) 982-5010. *Or circle 62 on the reader service card.*

Mailing List Feature New With TAPCIS 5.4

Support Group Inc. has released version 5.4 of *TAPCIS*, a communications package designed for saving time and money on the compuserve Information Service. With the release of 5.4, it's now possible to send electronic mail to an unlimited number of people on a distribution list with any combination of addresses on Compuserve, Internet, FAX, MCI Mail, TELEX, and so on. TAPCIS uploads the message once and then splits the mailing into groups to stay within Compuserve limits. This feature is especially attractive for businesses as an economical means for staying in contact with customers and staff. Compuserve charges only 10 cents for each address after the first one (that's less than sending a postcard by US Mail).

TAPCIS 5.4 also supports Compuserve's new across-library searching feature which enable users to search on a key word across all the libraries within a given forum. Other improvements include support for more than 25 screen lines, editable input prompts, an increase in the individual message size from 350 lines to 64K, message reading sped up by 400%, expanded limits on messages to 5000 per forum, ability to easily import the original message into a reply, address specific return receipts, a *TAPCIS.CFG* file to store standard command line options, and totally new communications routines that support configurable COM ports (1-8) and FIFO buffers for more reliable communication at speeds of 9600 and above.

Although 5.4 has many new features, it is designed so that existing *TAPCIS* users can get up to speed right away. The dramatically improved help function should also be of assistance.

TAPCIS was first released in 1986. *TAPCIS* costs $79 and comes with a no-risk 90-day full money back guarantee. Most people find that the program pays for itself in the first few months of use. *TAPCIS* includes 200+ page manual, disk, user ID and password for Compuserve, plus $15 of free connect time for new accounts. Registered users of earlier versions can update to *TAPCIS 5.4* for $20. Toll-free telephone support and online help through the *TAPCIS* forum (GO TAPCIS) are also available.

For more information call Support Group, Inc., (800) 872-4768 or (301) 387—4500. *Or circle 67 on reader service card.*

PRINTING ON THE CITIZEN

Sometimes it's asked how to include the *ESC* character or *CHR$ (27)* within a document for switching the printer to different font types. I discovered a little trick with my Citizen 120-D that allows this operation in the regular *SHIFT-PRINT* printing mode.

One set of characters in both an Epson and an IBM emulation interpret *CHR$ (155)* as the *ESC* character. The dip switches need not be changed as they are normally set this way, to interpret the upper ASCII codes as high-bit control codes. (Printing graphic characters instead requires a software command in this mode. The actual dip switch settings are FOFOFFOF.)

CHR$ (155) is produced on the Model 100 by pressing *GRPH* and the little *k*. This makes a left arrow on the screen. I follow this character with *-1* then the printer does underlining. Following it with *-O* turns underlining off. Use a four to turn on italics, and five turns italics off. A one does a three-quarters line feed; a two gives a regular line feed. An *M* puts it in elite printing, while a *P* gives regular printing.

Even without the *ESC* character, the Citizen 120-D switches to expanded print when sent *CHR$(142)*, made by pressing *GRPH* and *i* together. *GRPH w* turns expanded printing off. *CHR$(143)* switches the printer to condensed print (by pressing *GRPH e*. *GRPH ;* turns condensed off). These two font commands combined produce bold printing. All these characters work with the regular *SHIFT-print* mode of printing. Other printers, of course, may respond differently. One can discover how theirs will respond to these high-bit characters with this *BASIC* program:

```
10 FOR T=123 TO 255
20 LPRINT T" "(CHR$(T)" ";:NEXT
```

Then check the output carefully to see differences in printing. Don't be too surprised if *CHR$(140)* (or *GRPH'*) forces a page feed! You may have to change a dip switch if your printer is normally set to a graphics or a foreign language configuration. Check the printer manual. The computer owner's manual can be consulted to learn what key combinations are necessary for producing thse codes on a different computer.

Russ Hall
Albuquerque, NM

Executable version of PkTerm.ba:

```
1 'PkTerm.ba David L. Clark 04/30/88
10 CLEAR:DEFINTA-Z:CR$=CHR$(13):L$=CR$+CHR$(10):ES$=CHR$(27):U$=ES$+"q"
:V$=ES$+"p":ZO$=ES$+"P"
20 CLS:PRINTL$"To use the Model 100 as a live terminal"L$"start the Pick
Operating System on"L$"the larger computer and connect the"L$"serial ports
of the two machines."L$L$V$"Press ENTER to Continue ESCAPE to
Quit"U$":"ZO$;
30 K$=INKEY$:IFK$=""GOTO30ELSEIFK$=ES$GOTO9999
40 OPEN"COM:88N1E"FOROUTPUTAS1:CLOSE
50 POKE63066,1
60 POKE64268,58:POKE64269,31:POKE64270,172:POKE64271,126
70 POKE65450,1:POKE65451,13
90 CLS:CALL 21589
9999 MENU
```

USING THE MODEL 100 AS A PICK TERMINAL

I would like to be able to use the *PASTE* key and the *CTRL-S* key on the Model 100 when employing the machine as a terminal rather than as a stand alone computer.

I have written the History Database program for historical research and cataloging. The program will run on the Model 100 for portable data entry, and will also run on the IBM PC-XT, AT, 8036 machine, and larger computers under the Pick operating system, which is an operating system created for multi-user database management. A researcher can thus collect data in the field, upload the information later to a larger machine which can store a sizeable database, and use the same commands on both computers, rather than having to switch back and forth between two different programs.

The Model 100 can be employed as terminal, with access directly into the Pick multi-user operating system and database on the larger machine. I have written the following program, *PKTERM.BA* (for "Pick Terminal"), to make the connection through *TELCOM*. In addition, the program contains *POKE*s which will add a line feed to each carriage return when sending a file from the Model 100 and allow the use of the *F6* and *F7* keys to display a directory of the files and the amount of memory remaining on the Model 100. The *POKE*s are not restored automatically when the program ends.

The following instructions should be followed after a session with the Radio Shack Model 100 as a terminal:

Enter the command *OFF* to leave Pick, just as with any terminal.

To quit *TELCOM* press *F8* for "Bye." The prompt "Disconnect?" will appear. Respond by entering "Y" for Yes. Press *F8* again to return to Menu.

Use of the Model 100 as a terminal through *TELCOM* has the following limitations:

1. The function keys are reserved for *TELCOM*, and so are not available for use with the host program.

2. The Model 100 lacks the *INSERT* key found on the IBM PC keyboard.

3. Pressing *CTRL-S* causes the program to freeze, because *CTRL-D* is understood as pause, to be released only by pressing *CTRL-Q*. Novice users will not understand the Pause function, and think that "the computer is broken."

In *Basic* the function keys, *PASTE* key, and *CTRL-S* may easily be reset.

The Command: *POKE 63056, 64* will disable the *Break* and *Pause* functions, causing *CTRL-S* to return ASCII 19 without causing a *Pause*, and *CTRL-C* to return ASCII 3 without causing a break. The function keys *F1 - F8* will return ASCII 248 - 255. Assuming that the program began with a *CLEAR* statement, the *PASTE* key will return ASCII 0. Normal operations may be restored with the command: *POKE 63056, 0*. However, this *Basic* procedure will not work after control has been passed over to *TELCOM*.

How may a value be poked into the *Paste* buffer, without causing cold-starts? I have tried the routine which follows *80 A! = PEEK (63910) * 256 + PEEK(63909): POKEA!,239: POKEA! + 1,26*

I have experienced some cold-starts after returning to *Basic* at the end of the terminal session. I presume that confusion about the location of the end of the *Paste* buffer, due to my poke, was the cause. Is there a safer procedure to use?

David L. Clark
Malibu, CA

Forum is where you can show off your expertise and help your fellow readers! Address your tips, hints, and techniques to: Portable 100, Forum Dept., P.O. Box 428, Peterborough, NH 03458-0428.

COMPATIBILITY: Tandy Model 200.

DBG.CO

An interactive program debugging tool for your Model 200.

by Paul Globman

When I first got involved with computers (circa mid-1960's), I was not given any choice, with regard to number systems. In those days I had to know binary and hexadecimal.

We've come a long way since then, and almost everything about computers has changed. The input and output devices, the internal memory devices, the storage media, the size, the cost... everything seems new, with one exception. The one thing that remains the same is the internal representation of numbers and addresses. They are still processed internally as "ones" and "zeros" (binary), and referenced externally in the "hex" (hexadecimal) format.

I wrote *DBG.CO* because I needed an interactive debugging tool for exploring the contents of RAM. At that time, and to this date, I feel more comfortable using hex and was very disappointed to find that Microsoft did not give the M100/200 version of *BASIC* the ability to reference memory (or numbers in general) in hex.

DBG.CO was written for extensive use of hexadecimal notation for address and data bytes. In short, *DBG* allows you to display RAM and ROM memory, compare two blocks of memory, add and subtract numbers, examine and replace bytes in RAM, locate specific byte sequences, execute code, convert *HEX* to *DECIMAL* and *DECIMAL* to *HEX*. *DBG* wants your input and displays its results in hex.

USING *DBG.CO*

Run the *BASIC* loader (Listing 1) to create *DBG.CO*.

DBG.CO prompts for user input with the "greater than" (>) prompt. You can then enter one of nine commands. Here are the commands:

A = Add (and subtract) *HEX* numbers
B = Back to TEXT menu
C = Compare memory blocks
D = Display memory contents
E = Examine or replace memory
F = Find a byte sequence
G = Go to a *HEX* address and execute
H = *HEX* to decimal conversion
I = Integer (decimal to *HEX*) conversion

Except for the last two options, all values are entered and displayed in *HEX*. When entering a *HEX* number, only the last four digits are used, so F25F33 will be the same as 5F33.

```
1 '************************
2 '*  DBG    .CO            *
3 '*     by Paul Globman    *
4 '*  Copyright (c) 1989    *
5 '************************
10 FOR I = 63572 TO 64047
20 READ X:POKE I,X:SM=SM+X
30 NEXT
40 IF SM = 76483 THEN 60
50 PRINT"error in data":STOP
60 SAVEM"DBG.CO",63572,64047,63572
1000 DATA 49,255,255,33,84,248,229
1010 DATA 205,42,250,62,62,231,205
1020 DATA 242,249,230,127,202,97,248
1030 DATA 214,65,248,254,9,208,135
1040 DATA 33,124,248,133,111,126,35
1050 DATA 102,111,14,2,233,104,249
1060 DATA 0,0,3,249,18,249,214
1070 DATA 248,180,248,165,248,170,248
1080 DATA 142,248,205,246,84,218,31
1090 DATA 250,35,205,22,9,235,220
1100 DATA 31,250,62,72,231,205,176
1110 DATA 249,195,11,71,205,53,249
1120 DATA 225,233,205,53,249,225,205
1130 DATA 179,249,195,11,71,205,37
1140 DATA 250,75,235,33,0,0,205
1150 DATA 42,250,197,213,229,205,17
1160 DATA 110,225,229,204,176,249,225
1170 DATA 209,193,35,124,181,194,191
1180 DATA 248,195,42,250,205,53,249
1190 DATA 225,126,205,122,249,205,200
1200 DATA 249,216,202,245,248,254,47
1210 DATA 202,255,248,229,205,96,249
1220 DATA 209,225,115,120,254,13,200
1230 DATA 35,125,230,7,204,173,249
1240 DATA 195,218,248,43,195,246,248
1250 DATA 205,43,249,10,190,194,16
1260 DATA 250,3,205,184,249,195,6
1270 DATA 249,205,37,250,205,173,249
1280 DATA 205,179,249,126,205,122,249
1290 DATA 205,184,249,125,230,7,194
1300 DATA 24,249,195,21,249,12,205
1310 DATA 55,249,205,42,250,195,12
1320 DATA 250,14,1,33,0,0,205
1330 DATA 242,249,71,205,220,249,218
```

Continued.

Listing 1. DBG.BA, *the* BASIC *loader to create the program* DBG.CO, *a* DEBUG*-style program that interactively lets you explore the contents of a Tandy 200's memory.*

There is no delimiter (no space or comma) between the command (the letter) and its first parameter.

Additional parameters are separated with a comma (,) or space. You may use upper or lower case.

All errors are displayed as an asterisk (*) and the command is aborted, with a return to the > prompt.

If a lengthy section of RAM is being displayed, the scrolling can be paused and restarted with the spacebar. The *ESC* key aborts the display.

DBG COMMAND SYNTAX

In the examples following, the first line is the actual command that you would type (which you would end by pressing the *ENTER* key), followed by the response offered by *DBG.CO*.

A = Add (and subtract) HEX numbers:

```
A1000,1010
2010 FFF0
```

So for the two hex numbers *1000* and *1010*, which you typed after the command letter (*A*), the first response number, *2010*, is the sum and the second number, *FFF0*, is the difference.

B = Back to T200 menu takes you to the main menu.

C = Compare memory blocks:

```
C1000,2000,3000
100F 00 FF*
```

This compares the block from 1000 to 2000, with the block beginning at 3000, and displays the first nonmatch (address and values).

D = Display memory contents:

```
D1000,1FFF
1000  2E 34 00 FE 8F 19 DD F0
1008  EF FD B2 96 C3 05 F0 23
.
.
1FF8  DE 2E 41 BC C0 34 C0 C0
```

E = Examine or replace memory:

```
EFB00 23- ED- A4-/ED-/23-
```

After the hyphen (-) you can type a hex byte and it will get installed at the location. A space character displays the next location and a slash (/) backs up one location in memory.

F = Find a byte sequence:

```
F1000 3
1000
```

This looks for a match of the 3 bytes beginning at 1000 and displays all locations where these bytes are found. All of memory (RAM and ROM) is searched.

G = Go to a *HEX* address and execute:

```
G4F45
```

beeps and returns. If the code being executed ends in a return, then after execution you will remain in the *DBG* program.

H = HEX to decimal conversion:

```
H1000  4096
```

You type *H1000* followed by a space or carriage return (*ENTER*). 1000H equals 4096 (decimal).

I = Integer (decimal to *HEX*) conversion:

```
I4096
H1000 4096
```

The *HEX* and decimal equivalent values are displayed on the next line, in the same format used by the *H* command.

NOTE: The stack is set at FFFFH. A safe area for *E*)ntering byte sequences, which can then be used with the *F*)ind command, is FF00H. For example:

```
EFF00 00-C3 00-45 00-4F
```

and press *ENTER*. This replaces the three 00's located at FF00H with C3 45 4F (*JMP 4F45H*).

Here's another example:

```
FFF00,3
```

followed by *ENTER* will *F*)ind and display all locations in ROM or RAM memory where the above byte sequence is found.

DISCLAIMER

DBG.CO was designed to include features that I have seen and found useful in other *DEBUG*-type programs. Some parts of this utility may seem familiar, and I make no claim of originality regarding the functions or the "look and feel" of the program operation. The actual program code is the result of merging routines that I found in different sources, converted for the 8085 CPU, and optimized to eliminate duplication of subroutines.

TECH NOTES

DBG.CO was written to run in the Tandy 200's ALT-LCD area and does not require *HIMEM* to be reset. Non-ALTLCD programs can be *LOADM*'ed into place, and *DBG* can be used to inspect or modify the program. If you are not used to dealing with hex, *DBG.CO* is a good starting point for you.

Paul can be reached by modem on CompuServe (72227,1661) and GEnie (P.GLOBMAN), or by mail at 9406 N.W. 48th St., Sunrise, FL 33351 (please enclose SASE if you're requesting a reply).

```
1340 DATA 77,249,41,41,41,41,181
1350 DATA 111,195,58,249,227,229,120
1360 DATA 205,208,249,210,88,249,13
1370 DATA 200,194,31,250,13,194,55
1380 DATA 249,201,14,1,33,0,0
1390 DATA 195,61,249,205,37,250,229
1400 DATA 25,205,176,249,225,183,213
1410 DATA 193,8,124,205,122,249,125
1420 DATA 245,15,15,15,15,205,131
1430 DATA 249,241,205,163,249,245,121
1440 DATA 231,205,142,249,241,201,197
1450 DATA 213,229,205,3,139,225,209
1460 DATA 193,200,254,27,202,31,250
1470 DATA 254,32,192,195,6,250,230
1480 DATA 15,198,144,39,206,64,39
1490 DATA 79,201,205,42,250,205,117
1500 DATA 249,14,32,195,134,249,205
1510 DATA 190,249,208,209,201,35,124
1520 DATA 181,55,200,123,149,122,156
1530 DATA 201,14,45,205,134,249,205
1540 DATA 242,249,254,32,200,254,44
1550 DATA 200,254,13,55,200,63,201
1560 DATA 214,48,216,254,23,63,216
1570 DATA 254,10,63,208,214,7,254
1580 DATA 10,201,205,6,250,230,127
1590 DATA 201,205,236,249,200,60,248
1600 DATA 61,254,13,200,231,254,64
1610 DATA 216,254,123,208,230,95,201
1620 DATA 229,213,197,205,247,18,193
1630 DATA 209,225,201,71,205,176,249
1640 DATA 126,205,122,249,205,179,249
1650 DATA 120,205,122,249,62,42,231
1660 DATA 195,84,248,205,55,249,209
1670 DATA 225,245,205,62,79,241,201
1680 REM        END OF DATA
```

End of listing.

COMPATIBILITY: All coimputers.

Tips and Tricks for MCI

These sometimes undocumented methods can save you when you use electronic mail.

by Ken Jarvis

I am a computer consultant, and I live in Las Vegas. Why Vegas? Because it is THE GREATEST CITY IN THE WORLD. I do my business through electronic mail (e-mail). Why do I use e-mail? Because electronic mail is THE PERFECT WAY TO COMMUNICATE.

All it takes is good support, and that is what I try to provide. I have had people call me on Christmas and New Year's day to find out how to do something, or use a special feature.

Jack Balde, an e-mail friend of mine, probably is THE MOST KNOWLEDGEABLE PERSON that I know. Why? Because he uses it and has learned a lot of the tricks. He has a Model 100, travels all over the world, and conducts his business—almost exclusively via e-mail.

The following are some messages that he sent that may provide insights. These messages will explain more about how electronic mail works. I hope they are helpful.

A NEW USER GETS THE MESSAGE

The first is about a new user, and some of the methods of using e-mail that she should be told.

Since she will be communicating with people who do not read their mailbox every day, she should know how to specify *ALERTS* for MCI customers to let them know there's a message waiting.

With or without sending an *ALERT* message, she should specify *RECEIPTS* to the MCI Mail subscribers to find out if her messages are being read.

Tell her also that asking for a receipt for an Internet message is a waste of money—it just tells her when the message was turned over to Internet, not when Internet delivers it, which is usually 30 minutes later, but can be 3 days later if a message is sent Friday night or Saturday. Furthermore, it never tells her when the recipient reads the message.

More important, since she will be doing even more communicating with people on Internet, she should know how to use the *ALERT* message as a means of knowing that the recipient is going to read her message by sending an *ALERT* to the Internet recipients.

Since MCI does not recognize the *ALERT* message for an Internet or any other EMS (electronic mail service) address at the *is this correct?* message, she must know how to find out if she has set the *ALERT* message correctly.

Electronic mail is THE PERFECT WAY TO COMMUNICATE.

To do this immediately after sending the address, after MCI says *is this correct?* and she answers (Y), she should ask for the display of the address with a hidden instruction. At the *TO:* prompt, she should type **R* and press *ENTER*. The full address will then display.

In fact, the **R* can be used with any address listing. It is therefore convenient to use *EDIT LIST* then **R* to read the list. If she sees something wrong, she can directly delete the wrong address (*-name*) and add the correct address (*TO: Name*).

She should know how to register lists so that she does not have to look up addresses. Using the list for an address, even of a single person, records the *ALERT* command and phone numbers, as well as the charge account information.

She should also know that the *ALERT* message also works for *FAX* messages, and is particularly useful for those recipients whose fax machine is not at the desk, but in a special fax room in another building. Without an *ALERT* message, it could take 3 days for a fax to be delivered in some companies.

This is not action one must take regularly but only for those companies that have this problem.

Again, the use of *EDIT ENVELOPE* and **R* will enable her to verify the address entry with the *ALERT*.

She should know that the fax option *Retry 12 hours* is almost useless, and that MCI does not have a delay on fax as it does on the *ALERT*. There is no alternative yet to the laborious process of checking the receipts of the fax messages with the *SCAN* in command, and then resending to all the *CANCEL* messages.

Here the */include/* command is invaluable. After reading a *CANCEL* message, *SCAN* out, record the number of the outgoing message that you need to send again, open up a communication to the person whose message got canceled, and use the */include/* number to get the number of the outgoing message that needs to be sent again.

Tell her not to accept the option to cancel all fax receipt messages, but to read the receipts and cancel, using the *DELETE* command after *SCAN* to delete all the receipts except the *CANCEL* messages.

Sending again to those who did not get a message works well with the *INCLUDE* command.

She should also know the *INCLUDE*

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Options for your
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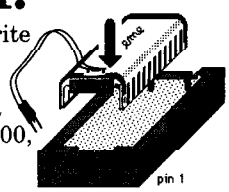
extRAM:

a 32K byte read/write memory expansion that fits into the option ROM socket inside your "T" —100, 102 or 200. Multi-talented...



• ***RAM-file-bank***: Double your space for .DO, .BA and .CO files. Put them in the extRAM and call them back instantly when you need them. The ever-evolving *EXTRAS* software has great capabilities for enthusiasts, too, to create custom program loaders.

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(Circle 83 on reader service card)

XR4: *coming soon, a four-bank, 128k big brother of the above!*

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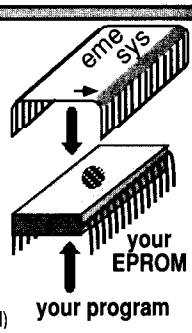
_____ extRAM.....$75ea _____
for? M100 T102 T200
_____ software disk.....$15ea _____
for? tpdd ms-dos Mac
_____ ROMBO...$9ea or $96/12 _____
_____ EPROM 27C256 .....$6ea _____
subtotal _____
+ tax (7.25% CA) _____
+ UPS shipping 3.00
Total.....

Rombo:

our tried and true adapter that allows rom developers and enthusiasts to use stock EPROMs (27C256) in the option ROM socket in the 100/102/200.



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TIPS AND TRICKS FOR MCI

command. This is invaluable for sending again to fax recipients whose machine was turned off, and sending to additional people whom you forgot for the first message. Of course it is also useful to forward a message to another.

INCLUDE is more useful than *FORWARD* because it does not burden the recipient with the whole address information.

She should be told about MCI storing an *IN* message for at least a month, storing *OUT* and *DESK* messages for a week, and that a message deleted does not go to *DESK* but to *TRASH*. If she misses retrieving a message read from the *IN* set, she can read it from *DESK*, and then again from *TRASH*, 3 tries to get it right. But note that *TRASH* stores for only a day.

She should know that an *IN* message can be *READ*, with pauses, every 24 lines (or whatever page length is set in the *ACCOUNT* specification) and then read without interruption using the *PRINT* command. If she has read it first, then she can open a file in her computer and command *PRINT* and the same message will be sent again.

All computers can communicate with MCI.

If she *SCAN*s first, then each message must be called out by number. Even if she *SCAN*s, however, the *READ IN* command will read the messages, (so that *PRINT* can be used later if the message needs to be saved) and then the next message can be read commanding *READ NEXT*, or just *NEXT*. This is useful if there is any risk of forgetting the number of the *SCAN* items, as for example when *OUT* or *DESK* messages have been scanned, and the *IN* box numbers might be confusingly high.

ADVICE TO ANOTHER NEW USER

I then sent another message to another new subscriber.

Dear sir:

I wonder if you are going to use MCI for any outgoing messages. If you do, you need some information on the tricks and how to make it really do things for you.

Some of the tricks that I use with MCI are not well documented, or even well known by MCI. Therefore for the MCI rep and for Lee Ng also, I made a checklist of the essentials not immediately evident from the MCI menu instructions.

Here is the list of information that I sent to Ken (Jarvis) in February. There are others, but these were just the ones that I happened to think of when I started listing at the end of a working day.

Holiday letterheads work on fax, though MCI says they do not.

Sending a fax to yourself at a hotel is a good way to get typed text for use at a meeting or a conference. It is low cost, and sure weighs less than lugging even the lightest weight portable fax machine or portable printer.

IBM locations shut down their fax machines at night and on weekends. Retry does not quite work unless the fax is sent after 9:00 P.M.

While an *ALERT* message can specify the time of sending the *ALERT*, it is not possible to delay a fax till the recipient's machine is on. The best you can do is to send the message after 9:00 P.M. on Sunday and specify retry for 12 hours. MCI will try 3 times an hour for 12 hours, and the last messages will connect.

Receipts from Internet come only from the acceptance of the message by Internet—it is unlikely that you will get a receipt for the moment of reading.

You get two receipts from CompuServe—one when CompuServe gets it and one when the reader reads it.

CC (for "carbon copy") does not work on fax. All messages are sent to listed people asking them to act as if they were the intended recipient.

800 numbers are not accessible from overseas. MCI had direct dial—non-800 numbers in Los Angeles, New York, Newark, Philadelphia, San Francisco, and Washington. They have been systematically deleting these, so that only Washington remains.

Don't believe the fiction that it takes *Lotus Express* to run MCI. All computers can communicate with MCI, even laptops like the Model 100.

Hope this helps explain a few more things that can and cannot be done using e-mail.

This is an article written by two different people, me in Las Vegas, and Jack Balde in Flemington, NJ. Electronic mail makes it easy for two or more people to collaborate on text. This is such a collaboration.

Ken invites people to contact him by calling (800)473-0509, via ATT Mail—!kenjarvis, fax #—(702)454-0509, Telex—6504680923, or by mail at 6420 East Tropicana Ave., #105, Las Vegas, NV 89122.

COMPATIBILITY: All computers.

Creative Planning

An alternative to burning midnight oil when creativity strikes.

by Jake Commander

Every now and then I find myself in the middle of a large programming project. And I love it. But after many years of wearing out pencils and keycaps in the cause of this noble art, I still fall into a few of the same old traps.

Usually I face a computing task requiring a certain time to complete. A simple estimation tells me whether I can save time or effort by writing a program to perform a task.

Everything is simple and logical up to that point. Assuming that my estimations are reasonably accurate, I can often save myself some time on a project. Even if I only break even, I'll at least have increased my flying time as a programmer, thus making me more proficient. But am I?

ADDICTED

Very often, when I write these one-off, custom-made programs I become addicted to the task. The program grows and grows.

Within my allotted time frame, the program will be in a usable form. By that time, however, something always seems to happen that I'm never able to foresee at the beginning of the project: I suddenly get creative.

Before I know it, the inspiration comes flooding down from the heavens. Soon, a glance at the clock reveals its hands in an early morning stance and my eyes respond by becoming bleary. The project now begins in earnest.

It's not difficult to see that this could all be blamed on a lack of discipline, and I often chastise myself because of it. But how can I be fair to my own sense of creativity? What am I supposed to do—stifle it for the cause of being a good boy? No thank you. The results of my extended efforts are nearly always useful to me, more useful than the originally planned program. Besides that, I enjoy it.

CREATIVITY

So what's to be done? Do I write the program I have in mind at the start of the project and accomplish my task with a few quick flourishes across the keycaps? Or do I allow my creative juices to flow unchecked, spend inordinate time, and finish with an even more useful program than I intended? I almost shamefully admit I nearly always choose the latter.

But as someone making a living at this, I have to stop somewhere. Time is, after all, money. There must be some way to optimize the mix of productivity and creativity; some way to "design in" some discipline from the start.

Instead of programming my way out of a labyrinth, I can design the labyrinth myself.

Of course I have a suggestion for anyone sharing my problem; otherwise what would I be writing this for? The answer seems to be to acknowledge the problem from the start and do what many programmers already do: flowchart the program. What else?

For those of you who have learned programming by hands-on, head-on meetings with microcomputers, flowcharting may be something you've not considered.

What do all those boxes, diamonds, and lines mean? For a start they often mean a considerable savings in time with anything other than a very short program. For diehards like me, they offer a solution to the program that threatens to become a monster.

BAD FORM

You may have heard it said it's bad form to start a program at the keyboard. Strictly speaking, that's true. But what if it's a simple one- or two-liner? What if the function of the program is so simple and direct it would be a waste to invest time in program design on a piece of paper? In those circumstances, I'm afraid I'd start just like you're *not* supposed to . . . at the keyboard.

The problem arises when I find a couple of bells and whistles making the program less specific in its approach. Ergo, it will be more generally useful and will save me time in the future in some unforeseen circumstance. By flowcharting first, however, I have a chance to see what monster the program might become. Instead of programming my way out of a labyrinth, I can design the labyrinth myself.

A flowchart lets you see the overall flow and complexity of your program. By designing it first on a piece of paper, you get some idea of the time it's going to require to code it.

IDEAS UNCHAINED

Not only that, but your creativity remains unfettered. Any new ideas can be inserted much more easily into a flowchart than a program. Problems in logic flow can literally be seen before they occur. That's the main strength of a flowchart. It separates the logical design of a program from the actual mechanics of coding. There's no need to take into account which variables do what. Ideas can

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Continued from pg 33.

be incorporated as they occur, thus freeing up the creative process and separating it from the logical process. The left and right hemispheres of your brain can remain friends.

Whenever I realize the project I'm about to embark on should be tackled via a flowchart, I write tighter, prettier code, and the program is finished faster.

And no amount of commenting within the code beats the clarity of a flowchart. If you need to write the same program in *Pascal* instead of *BASIC*, just take that flowchart and code it from scratch. The creativity and impeccable logic are frozen within the skeleton represented by that flowchart.

I hope I've convinced some of the "free-form" souls out there that there are ways of imposing discipline without sacrificing creative freedom. The simple application of lines, rectangles, and diamonds to paper can free you from yourself.

IBM E.S.D. PRODUCT SERVICE SUPPORT

NEW RETAIN TIP

Record number	:H031944
Device:	D/T8550
Model:	M
Hit Count:	UHC00000
Success count:	USC00000
Publication code:	PC50
Tip key:	025
Date created:	089/02/14
Date last altered:	A89/02/15
Owning B.U.:	USA

Abstract: MOUSE BALLS NOW AVAILABLE AS F.R.U. (Field Replaceable Unit)

MOUSE BALLS ARE NOW AVAILABLE AS A F.R.U.

If a mouse fails to operate, or should perform erratically, it may be in need of ball replacement. Because of the delicate nature of this procedure, replacement of mouse balls should be attempted by trained personnel only.

Before ordering, determine type of mouse balls required by examining the underside of each mouse. Domestic balls will be larger and harder than foreign balls. Ball removal procedures duffer, depending upon manufacturer of the mouse. Foreign balls can be replaced using the pop off method, and domestic balls replaced using the twist-off method. Mouse balls are not usually static sensitive, however, excessive handling can result in sudden discharge.

Upon completion of ball replacement, the mouse may be used immediately.

It is recommended that each servicer have a pair of balls for maintaining optimum customer satisfaction, and that any customer missing his balls should suspect local personnel of removing these necessary functional items.

P/N33F8462 — Domestic Mouse Balls
P/N33F8461 — Foreign Mouse Balls

COMPATIBILITY: All MS-DOS and Macintosh computers.

THE AMAZ!NG FAR SIDE CALENDAR

Bring the Far Side to your side with this nifty calendar program.

by Linda M. Tiernan

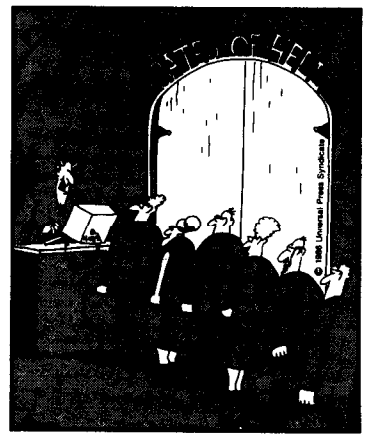
I heard a story that the people behind Amaze!nc, the producers of the *Far Side Computer Calendar*, had worshiped Gary Larson from a distance for a long time before they arranged to meet him "casually." Then, they asked him if he—um, might consider providing pictures for a computer calendar line of theirs?

I don't know if this tale is true, but the indisputable fact is that Larson responded enthusiastically. The product is a masterpiece of Larson artwork. Even the packaging contains samples of that unique brand of Larson-esque humor that most of America has come to know and love (and probably people in a lot of other countries, too).

FAR OUT FROM THE START

It may take you a while to open the package, because even reading the box is enjoyable. When you do open it, you'll find an envelope with diskettes in it (five 3.5-inch diskettes and three 5.25-inch diskettes). On the envelope are the liability and warranty statements, as well as restricted rights statements and the buyer's responsibilities, all in proper legalese. Reinforcing these statements is a plain-English insert from Gary Larson himself, in his own inimitable style. (I have reprinted this as Figure 1, to prove my point.) There is a *Far Side Computer Calendar* user guide (more on that later).

Also in the package is a foldover that, anywhere else, would be an ordinary software registration card. Not here. The outside states, "Open this and get mugged." The inside says, "For going to all the trouble to fill out this registration card (about all we need is your name and address, for goodness sake) we're going to send you a Far Side mug." The blurb finishes with, "Send in this card now. What are you doing still reading? You're wasting time." This certainly sets the tone for the *Far Side Calendar* program.



"OK, sir, would you like inferno or non-inferno? ... Ha! Just kidding. It's all inferno, of course —I just get a kick out of saying that."

A note from The Far Side

This was an exciting project for me.

The thought of some of my characters actually moving, while somewhat frightening, proved to be irresistible. And the people at Amaze, knowing I'd have concerns and questions about this new medium, lived up to their name in putting this thing together. (By the way – if you're used to seeing The Far Side in some published form, you'll need to keep in mind that the computer's display is not the same as the printed page. Those little pixels – I confess to calling them "pickles" the first time – sometimes have a mind of their own, and your own particular system may have a bearing on how the cartoon appears on your screen. Be assured, however, that the cartoon's essential, demented essence will still be in your face.)

But I'd like to make one request on behalf of both Amaze and myself: Please don't copy this disk for your friends (or your enemies). I assure you, the cartoons you're about to see were not all drawn on a rainy Saturday. And, likewise, the Amaze calendar program and animation sequences were not developed on the following Sunday. In other words, a lot of caring and hard work went into this little "experiment," and to ensure we can all get together and do this again next year, its copyright needs to be respected. Plus – just so you know – it's said that every time someone asks you for a copy and you respond with "take a hike," an angel gets his wings.

I'll thank you 'til the cows come home.

Gary Larson

Figure 1. Gary Larson's appeal to fair play and common sense.

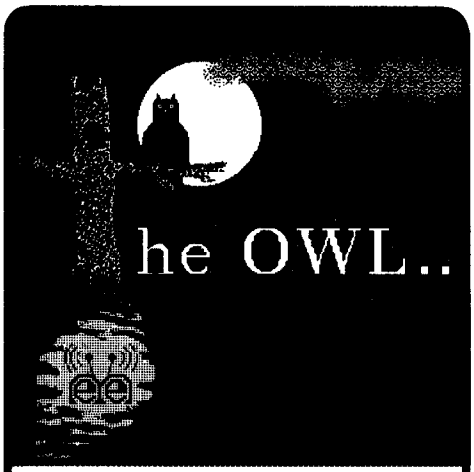
This calendar package really has a split personality: half Larson and half Amaze!nc. The Larson half provides a daily cartoon, one for every day for one year from the time you install the program, with promises of more to come. (Does this mean there are three hundred and sixty-five more Larson cartoons ready to go, Gary?)

The program also provides animated full-screen Larson cartoons that pop up at the darnedest moments. When I first installed the calendar on my hard drive, I watched the opening screens fade to a caveman, very busily chiseling away on a column of stone, chipping away at all sides, until he stood with a completed upright piano, and then he . . . naw, I won't spoil it for you. Buy the program and see.

SYSTEM REQUIREMENTS

These Larson pictures truly set the system requirements for your computer. As we all know, a picture is worth a thousand words and takes up even more space than that, on a computer.

To run the MS-DOS version of the *Far Side Calendar* you need an IBM-compatible computer with Hercules, EGA-, or VGA-compatible video display, 540K



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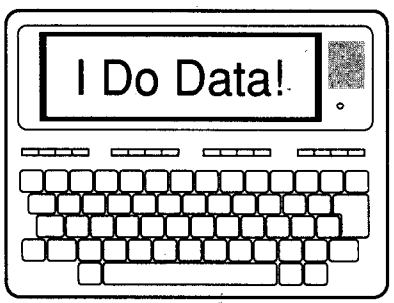

❶ On-screen data display, 7 lines for 7 channels. Shows data, units, setup info. Also display modes for up to 49 channels.
❷ Line 8 is for display of battery voltage, free memory, time, date and logging status. Line 8 doubles for display of remarks, commands and queries you type in.
❸ Function keys:
F1) to wake the OWL or put it to sleep on a two-minute cycle.
F2) to edit the HOW setup file and return directly to the program.
F5) to enter a remark into the data file. Commands are entered as remarks, to do things like change the logging interval. Commands can change virtually any program parameter. It helps to keep record of all actions right with the data file!
F6) upload the data via any T102 device, i.e., RS232, or run an external transfer program for disk or phone line upload.
F7) look at the current data file and return directly to the program.
F8) exit to T102 menu.

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RAM, and MS-DOS 3.1 or later. You also need a hard disk with 800K free space for the calendar program, 380K free for animations, and 1.2 MB for VGA graphics or 840K for EGA or Hercules graphics. (The program also recommends, but does not require, a mouse. I find that arrow keys and the *ALT*-letter combinations work as well.)

These requirements knock a few portables out of the running; but the good news is that you may load the calendar program for a few months at a time. It is unnecessary to load the entire year at once. The user can select specific months during the install operation. With a little RAM conservation here and there, the program should fit.

It's worth it, to see Carmen Miranda's family reunion, or watch Rusty make his move (which, I see by my video display, happens to fall on Valentine's Day). If you love Larson you'll love these cartoons, because he has gone to a lot of trouble to make certain they are reproduced as faithfully as possible on the screen.

The manual for the *Far Side Calendar* is very clear and concise.

The other portion of this package is the basic Amaze!nc calendar program. I found it to be very similar to *DeskMate*'s *Calendar* program, although it adds neat little twists and features not found in *DeskMate*'s *Calendar*. Like the *DeskMate Calendar*, the *Far Side Calendar* has pull-down menus.

Similarly, you navigate the screens using the spacebar to push buttons or mark/unmark "X" boxes and the *TAB* to move to new choices. Unlike the *DeskMate Calendar*, the *Far Side Calendar* uses the *ALT* key in combination with letters to make selections from the main calendar menu (which, if you use a mouse, are clickable).

One function the *Far Side Calendar* lacks is an annual reminder—a spot to put somebody's birthday or other events that occur annually. Otherwise, the basic calendar offers more flexibility than the *DeskMate* version. For instance, if you have an event that only happens every other Saturday, or the first Saturday of every quarter, or the last Tuesday of the month, or every two days, you can program it into the *Far Side Calendar*, using the *Repeat Event* button. This is handy as a bill-paying reminder, too (for example, rent due last Thursday of the month!).

Whether your event is one-shot or repeated, you can log it into the calendar. Then, the clever people at Amaze!nc show that they appreciate Gary Larson because their minds work much the same way. You can set an alarm to remind you of the event, but no ordinary alarm. Your alarm can give you a bit of Mozart, Vivaldi, a plain old beep, or several other choices.

You can even test play it. (Remember that alarms sound only if your computer is on at the time, tuned to the *Far Side Calendar*.) You also see what else you have listed for that day's events. You can also choose one of twelve little icons to remind you visually about the particular event you are logging in.

These little icons are attention getting because they move: a classroom scene where a paper airplane drifts past the teacher, a car moving down the street, various medical practitioners' symbols flashing by, and so on. They are not Larson illustrations, but "standard icons" designed for the basic calendar package.

CLOSE IN INSTALLATION

I was a little intimidated at installing the program. Although it was very straightforward, the manual told me about features it would install automatically if I so desired. I did not so desire, so I wanted to make sure I had full control in my own hands before I started the *Install* process.

One of the modifications it offered to make was to update my *AUTOEXEC .BAT* file so there would be a path directly to the *AMAZE* subdirectory. My computer would start up with the *Far Side Calendar*. On my computer, that's *DeskMate*'s position, and I didn't want to subvert it for the *Far Side Calendar*. However, the manual showed me that I could refuse the automatic change in *AUTOEXEC.BAT*.

The manual for the *Far Side Calendar* is very clear and concise. If Gary Larson didn't edit it, then his fans at Amaze!nc did. It contains his sense of humor. The foremost quality of that sense of humor is its subtlety. It doesn't interfere with a straightforward reading of the manual.

If you are in a hurry, you don't waste time weeding through unnecessarily clever script. The manual starts with "If

You Hate Manuals," instructions for those who never read the manual (better known in other fields as quick-start guides). After "Welcome" and the installation instructions is the body of the text.

The manual text describes the program function by function in an order that you can also use as a tutorial. At the end are troubleshooting hints and a fairly decent index. I did look for the word "Theme" in the index—one of the main menu choices—and the manual did not index it. The "Theme" choice, it turns out, is irrelevant to the operation of the *Far Side Calendar*. However, it should have been mentioned in the index, if only to tell me that I don't need to worry about it.

The choices for viewing your calendar include these: as a page from a Far Side cartoon (cartoon and today's date only), one day only, one week at a time, one month at a time, or one year at a time. These choices, accessible by *ALT*-letter, display themselves across the bottom of the screen. You may also *TAB* to these

Help is actually helpful, a rare treat.

choices, or *TAB* to the *Forward/Back arrows* at the end of this selection row to move forward or back on the timeline.

At the top of the viewscreen are fairly standard computer selections, also accessible by *ALT*-letter: *File, Edit, Themes, Help*. From *File*, you save your program, print, set up page display, exit, open, etc.—as standard as the *DeskMate* file functions. [Note: When you add or drop items from your schedule, you must save the new version before you exit the *Far Side Calendar*. If you have made changes, it asks you if you want to save them before you exit.]

Edit is the function that allows you to add or drop events from your calendar. *Themes*, well, there's only one theme, the Far Side—if you didn't want that you shouldn't have bought the package. It shows that the company created this calendar package with an eye toward the future, toward other possible themes. *Help* is actually helpful, a rare treat. Most help functions on other programs may refresh your memory, but don't help you learn anything new.

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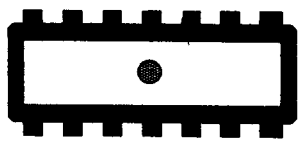

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PRINTING CALENDARS

The printed results of the *Far Side Calendar* program are one of its drawbacks, unfortunately. What you see is not what you get. You cannot print the Far Side cartoons. That is only sensible. There are such considerations as copyright laws and Gary Larson's right to earn a living from the work he produces. You print the calendar only, with your schedule and dates—all the components of the AmazeInc basic calendar package.

There are options allowing you to design a page as small as you'll need for an organizer notebook, with sizes right up to full page. (Small is 3.75 by 6.75 inches; medium, 5.5 by 8.5 inches; large, 8.5 by 11 inches; full page, determined by you from margin settings, etc.) You can print headers and footers, and set the margins, on the full page. Single- or double-page, border or unbordered, in the format of day, week, month, or year, with any range of dates—all these are selectable from the *Print* dialog box. (Choose a printer during the install process. Rerun the install process later if you must add printers.)

The print is more a (graphic) type font style than standard computer print. This means that it takes longer to print, but it is more eye appealing and easier to read. The most attractive, flexible, and legible of the printed calendar versions is the largest. The program abbreviates everything for the smaller sizes.

The smallest prints only the date and time you have an event scheduled, and not what it is. The framework and borders are pretty, but the actual text is a little lacking when you print it out. Gary Larson and AmazeInc designed this program more for viewing on a screen rather than for printing out on paper. Because it is graphic-style print, it takes a very long time to produce a page.

Also, while your *Weekly* screen ranges from Monday to Sunday, the program prints Sunday to Saturday. Suppose you look at your screen and choose to print a week you're looking at, such as the week of Monday the 24th through Sunday the 1st. You must wait for two calendars to print. First, the program will print the week of Sunday the 23rd through Saturday the 31st, and then the week of Sunday the 1st through Saturday the 7th. At the speed at which most printers print graphics, you'd better not be in a hurry.

PERSONAL FILES

Another plus, however, is the versatility of your personal files. You can have more than one data file. The *Far Side*

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Calendar comes with one already started (*HOLIDAYS.CE*), which lists all the American and Canadian holidays. You can add your scheduling to this data file, and keep on going.

The first time I ran the *Far Side Calendar*, I didn't realize that I had to load *HOLIDAYS.CE* as a file first, from the *File* choice on the main menu. It didn't load automatically. So I created a schedule without holidays. I should have followed the tutorial, but I followed the directions for people who hate manuals. *HOLIDAYS.CE* was not mentioned there.

Since you can save schedules under different names (using the standard *Save as... File* command), Mom, Pop, and the kids can each have a different Far Side schedule without conflict (except the struggle for computer time). If you don't run the *Far Side Calendar* automatically, you can start the program with

Mom, Pop, and the kids can each have a different Far Side schedule without conflict.

AMAZECAL FILENAME.CE and load up the program and your schedule (*FILENAME.CE*, in this example) in one fell swoop. (You can probably adjust the command in *AUTOEXEC.BAT* to do the same.)

If you plan to keep your schedule on your computer, and you have the room to load the graphics and the sense of humor to appreciate them, the *Far Side Calendar* is for you. If you find cartoons uninteresting and want a calendar program that will print pages to arrange in your pocket organizer, this is not it.

Gary Larson's cartoons are visually appealing, as are the onscreen graphics of the Amaze!nc calendar portion of the program. The onscreen visual display is the strength of the *Far Side Calendar*. It is also fairly easy to load, as long as you make sure what you want and don't want first. I find it very entertaining, a fun way to keep my appointments in order.

The *Far Side Calendar* program comes in three versions: DOS, *Windows*, and Macintosh. Suggested retail price is $69.95.

Product Specifications and Suppliers

***The Far Side Computer Calendar*—$69.95**
Three versions available: MS-DOS, *Windows*, Macintosh

DOS Version requirements:
IBM-compatible with Hercules, EGA-, or VGA-compatible video display
640K with 540K free RAM
Hard disk with 800K free space for daily planner program, 380K for animations, and 1.2 MB for VGA graphics or 840K for EGA or Hercules graphics

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Further, LUCID© has what no other spreadsheet has: Cut, Copy, and Paste. It uses the same keys as Cut and Paste in TEXT, but here's the difference: it takes all the formulas with it when you paste and they all automatically recalculate with the entire sheet.

And here is what is really amazing. You can copy or cut from one spreadsheet and paste into another spreadsheet or even a TEXT file.

LUCID©supports all BASIC math functions as well as Log, sine, cosine, tangent, exponentiation and other sophisticated math functions.

LUCID© has so many features that you will say "this is what I need in a spreadsheet", such as automatic prompting of an incorrectly typed-in formula showing just where the mistake was made.

LUCID© has expanded "go to" functions that remember and produce a windowing capability.

But perhaps most remarkable is that LUCID© is not only a spreadsheet but a program generator as well. First, LUCID© lets you protect all cells against entry or change, and then unprotect just the cells you want for someone else to use as input fields.

LUCID© will not only process values, but text input as well so that the facts other than numbers can be responded to. LUCID© has the ability for you to refer in a formula to cells containing words. This feature combines with the capacity of doing "if then" statements that work by doing table look-ups against even massive X/Y charts of text or numerical information. You can produce a program that responds to inputs with no programming knowledge whatsoever.

You can prepare a report section in your spreadsheet with instructions to your user for printout, and they can produce a personalized printout that responds to their input. All your formulas and tables that did the calculations and provided the facts are invisible to that user. LUCID© is useful for doctors for patient questionnaires, trouble-shooting technicians, purchase clerks, people doing job quotes, stores for customer workups, insurance agents and anybody who needs to process specific facts and numbers to produce a report based on those responses.

LUCID© comes with a manual that explains not only the characteristics of LUCID©, but will train you how to use a spreadsheet even if you have never seen one before. You are shown how to do budgets, forecasts, breakeven analysis amortizations and many other types of personal and business reports and calculations.

User friendly is such an over-used term in this industry, but a typical comment has been "I have never seen a spreadsheet that does so much, and yet LUCID© is so much easier and faster to use."

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WRITE ROM is the definitive word processing extension for the Model 100. PCSG produced the first text formatter for the Model 100, now sold by Radio Shack as Scripsit 100. Now, 18 months later, PSCG introduced WRITE ROM. Those who have experienced it say WRITE ROM literally doubles the power of the Model 100.

WRITE ROM — as its name implies — is on a snap-in ROM. You simply open the little compartment on the back of the Model 100 with a quarter and press WRITE ROM in. It's as easy as an Atari game cartridge. You can use other ROM programs like Lucid whenever you wish.

WRITE ROM lets you do every formatting function you'd expect, like setting margins, centering, right justifying and creating headers and footers. But it does them under function key control.

WRITE ROM remembers your favorite format settings so you can print a document without any setup, but you can change any formatting or printing parameter instantly with a function key.

WRITE ROM's "pixel mapping" feature shows you an instant picture on the screen of how your printout will look on paper.

In all there are 64 separate features and functions you can do with WRITE ROM, and some of these features are truly breakthroughs for the Model 100.

First, WRITE ROM lets you do search and replace. Any word or phrase in a document can be searched for and replaced with any other phrase where the search words appear.

Second, WRITE ROM lets you send any text (formatted or not) to any other computer over the phone with just a function key. What's more, it dials and handles sign-on and sign-off protocol automatically.

Third, WRITE ROM has a wonderful feature called Library that lets you record favorite phrases, words or commonly used expressions (often called boilerplate).

Any place you wish Library text to appear you just type a code. WRITE ROM automatically inserts the text just like a Xerox Memory Writer. Picture what you can do with that kind of capability.

WRITE ROM is blindingly fast. No one can claim faster operation. Because it is on ROM it uses virtually none of your precious RAM. It works with any printer, serial or parallel. You can make a duplicate copy of a document file under a new filename. Rename or delete (kill) any RAM file with function key ease.

This description only scratches the surface of this amazingly powerful piece of software. Dot commands allow control of such things as margins, centering, line spacing and other changes in the middle of a document. Most are WordStar™ compatible.

A mailmerge feature allows you to send the same document to every name on your mailing list, personalized for each recipient.

WRITE ROM enables you to do underlining, boldface and correspondence mode as well as any other font feature like superscripts that your printer supports, in a way that many users say "is worth the price of the program."

To underline you don't have to remember a complicated printer code. You just type CODE u, and to stop underline, CODE u again. The CODE key is to the right of your spacebar. Boldface? CODE b to start and stop. Easy to remember and do. Five different printer features of your choice.

We couldn't list all the features here. For example, you can select not just double space but triple or any other. You can use your TAB key in a document. WRITE ROM allows you to undent. This means you can have paragraphs with a first line projecting to the left of the rest of the paragraph. WRITE ROM has a feature unique for any word processor on any computer. It's called FORM. FORM is an interactive mechanism that lets you create screen prompts so that you or someone else can answer them to fill out forms or questionnaires.

With FORM, any place that you had previously typed a GRAPH T and a prompt in a document, WRITE ROM will stop and show you that prompt on the screen. You can type in directly on the screen and when you press F8 you see the next prompt. It goes to a printer or a RAM file.

Think how you can use FORM. A doctor or nurse could use it for a patient's history with each question appearing on the screen. An insurance salesman could use it for his entire questionnaire. You could construct a series of prompts to answer correspondence, typing the answers, even using Library codes. This feature lets you answer letters in rapid-fire fashion, each with personalized or standard responses.

Before WRITE ROM you had to be a programmer to create a series of prompts. Now it's as simple as GRAPH T.

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The End of the WP-2

International politics or bad marketing?

by Dave Rosenstein

The Tandy WP-2 Word Processor was the ideal writer's traveling companion:

An ultra-slim notebook with no raised screen that would draw unwanted attention when resting on one's lap.

At under three pounds, a superlightweight whose batteries last a day or two instead of an hour or two.

An extremely mobile text input/storage device with a full-size keyboard that, with a couple of third-party add-ons, makes a terrific adjunct to a DOS or Mac personal computer.

So naturally, Tandy is discontinuing the WP-2.

As a writer/publicist with a minor but annoying writing disability, I rely on my two Tandy travelers, the venerable Model 102 and, more often now, the even slimmer WP-2. There is nothing else as perfectly designed for extensive note taking in interviews, at conferences, seminars, and classes.

Afore ye ask: This article is being written on a IBM-compatible 386, with *WordPerfect 5.1* pleasantly displayed on a VGA color monitor. Each tool has its place. And I love my WP-2. In fact, I just bought a second at a closeout $250 when I learned of Tandy's intent.

Why, you ask, would Tandy do such a thing? Could it be a tale of poor marketing? Perish the thought and blame the politicians.

NOT A HARBINGER

The first thought was that the closeout must just precede a follow-on model, perhaps one with a modem. But inquiries at a half-dozen New York Radio Shacks and calls to Tandy's Fort Worth hotline (which, frankly, isn't even warm) and to the usually knowledgeable folks at *Portable 100* magazine turned up nada. Then, sage Rick Hanson at Club 100 led me to a clubmember (aren't we all?) to whom Tandy had owned up.

Colorado freelance writer Bill Conklin had written Tandy, raving about the WP-2, suspicious that it might be discontinued. A Tandy buyer, Colin D. Meyer, confirmed Conklin's fears in a February 3 letter: "Radio Shack was forced to . . . drop the product based on some U.S. government tariffs/duties on this type of product that were recently imposed [which] would have made this fine product sell for considerably more money than it does today."

Well, politics or no, Tandy marketing, or the lack of it, surely played a part here.

In a push for DOS, the Tandy rep also suggested that "although the WP-2 is an excellent machine, more and more people are turning to products like the Tandy 1100FD and 1110HD ... and consequently sales have not remained at their successful numbers."

BLAME TANDY'S MARKETING

Well, politics or no, Tandy marketing, or the lack of it, surely played a part here.

As usual, Tandy disdained third-party support for their product and refused to publicize the WP-2, which, with a few enhancements available from Club 100 and others, is a real power tool.

Bill Conklin's letter to Tandy lauded the same WP-2 configuration that this writer has found so effective: Boost internal storage with a 128K memory chip available from Club 100 and other suppliers for little more than Tandy's $49.95 for an optional 32K chip. Add an easy link to an MS-DOS PC via *WP2DOS*, Club 100's nearly effortless conversion software for moving files from the WP-2 to a PC. (A Mac version is also available.) I now have little use for the Tandy PDD-2 disk drive except perhaps on the road. My desktop PC handles long-term file storage.

Since the WP-2's *.DO* files must be converted a PC-friendly format with the proper carriage return/line feed signals, Club 100 bundles Gene Wilburn's *TWP Toolkit* utility conversion software with *WP2DOS*. While the WP-2 does have an ASCII conversion capability, it is slower than Wilburn's, which in addition to ASCII also offers conversion to *WordPerfect* or *WordStar*.

Anyway, I prefer to retain the WP-2's copy of the file in original *.DO* format just in case I do any formatting and want to print directly from the WP-2 instead of the more typical transfer to my PC for massaging and laser printing.

In the PC, *WPDOS* is accessed via a batch file called *GO.BAT*, which calls up a simple menu for easy selection of the desired function. Since my conversion software is in a *CONV* subdirectory, I use another little batch file called *WP2.BAT* to change directories and enter the *GO* command at the DOS C:\> prompt to

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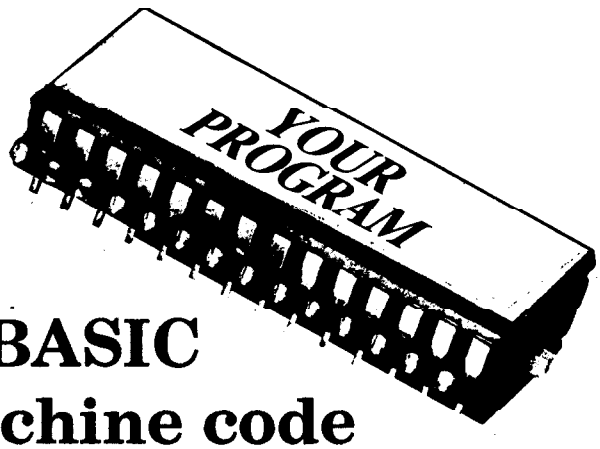

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bring up the *WP2DOS* menu.

NOBODY GOT THE WORD OUT

Tandy never got out the word that the WP-2 was a serious tool, so corporate America never even considered it.

Personal experience in trying to convince a Fortune 500 pharmaceutical company to check out my WP-2/IBM hookup is typical of the mindset that good marketing should have targeted. A manager in Corporate Communications at the time, I suggested to MIS that they see what I was doing with the WP-2 and my IBM PS/2. "Sorry, we don't support Tandy," I was told.

As a freelance publicist, I suggested to Tandy in late 1989 that they pitch the story of the new WP-2 to the business media, positioning it as a road tool for traveling execs and media folk. The $4 billion electronics giant ignored the advice. Compete with Compaq and Toshiba? Feh. Everybody knows managers like toting status-rich—if largely unneeded—technology around, right? Or maybe Tandy thought competition would be unAmerican?

"Sorry, we don't support Tandy," I was told.

So, throughout the U.S., managers struggling to master DOS commands are sitting on airplanes writing straight text memos and reports on overpriced, six-pound-plus DOS machines that can't even make it through a NY-LA redeye flight on a fully charged battery.

And as he travels around the U.S. covering income tax trials, IRS expert and gadfly journalist Bill Conklin, who offers a reward to anyone who can show what statute makes one liable to pay an income tax and how one can file a tax return without waiving their Fifth Amendment rights, is wondering what will replace his WP-2 when it ultimately fails.

Dave Rosenstein is a freelance writer and president of Public Interest Marketing, a New York-based marketing communications and public relations firm specializing in public affairs and issues-oriented campaigns.

The Portable 100 Classifieds

Software

FAST (tm) 3x turbo cassette LOAD/SAVE utility for Tandy M100/102, M200 (specify). See 11/89 P100 review. SASE for information. Cassette, manual $19.95 ppd. Zwillenberg, 475 Richmond, Maplewood, NJ 07040

Hardware

Model 100 32K with Super Rom $275.00 firm. Call (308)527-3506.

Model 100 32K, Multiplan ROM, DV/I, Modem, Cable, Recorder, Software, book, $450.00; C. Itoh printer $150.00. (812)853-3297.

Tandy 102 32K, Portable Disk Drive & portable Brother printer $350.00; Tandy 1100FD 640K and modem $450.00. (213)828-1997.

TRS-80 Model 100 32K, Super ROM, case, legs, adapter, seven software packages, books. Needs new LCD screen. $199.00. Peirce, 2948 Blairstone Ct., Tallahassee FL 32301.

EMM, integrated ExtRAM/RAM/PDD-1&2 file manager. Runs in ExtRAM, utilizing unoccupied space for file storage. Features aggregate file selection and file compression. Send SASE for information or $15.00 for disk. TPSIG, P.O. Box 684473, Austin TX 78768-4473.

Record voltage or other analog parameters with your 100/102/200. DATAMITE A/D converter connects to cassette jack, software provides voltage readout and/or emulates scrolling chart recorder on your Tandy screen. $66 + $4 S&H: Jones Service & Design, 1842 S. Nugent Rd., Lummi Is., WA 98262. (206)758-7258.

Data Acquisition with M100/102. REI, RR1 Box 113F, Royalton, VT 05068. (802)763-8367. 10/91

Tandy 102 w/32K, adapter, & null modem. Rarely used. $225.00 (409) 935-5637 5/91

For Sale

TRS-80 Model 100, 32K, Scripsit 100, $200. Model 102, 24K, TView 80, $200. Diskplus, $75. (617) 871-1778. 3/92

TRS-80 Model IV computer.One 5Megabyte Hard Disk Drive. One Radio Shack Printer -- Letter quality. Call (215) 279-8060. Best Offer.

M100 w/24k. AC power: legs: Epson Spectrum LX-80 printer; cassette drive CCR-82; All cables & manuals; all: $250 (ship included) 808-943-1133 4/92

WP-2 ROM simulator card! Plugs into the expansion card slot of the WP-2. Holds up to four 256Kbit EPROM's or two 1Mbit EPROM's. $89.95 each. Midwest DataCard Marketing (513) 433-2511 12/90

WP-2 with 128K and WP-duet—$400. Call Tom (707) 446-6435 3/92

T100-32K with Video/Disk Interface, acoustic coupler, recorder, software. Package only $595. EC. Dominic, 215-339-5848 6/91

Two Model 100's with ROMS. One 100K FDD Accoustic Coupler and assorted software. Call or write for description and price.. Like new. PO Box 3104 Mankato, MN 56001 (507) 726-2704

Wanted

Hobby contact wanted with Tandy notebook users in Paris and suburbs. Possible program exchange. Speak English, French, and Model 100 assembly language. Call 45-03-12-16 Paris phone, or write Mike Kelton, 39 Avenue Paul Doumer, 75116 Paris, France. 4/91

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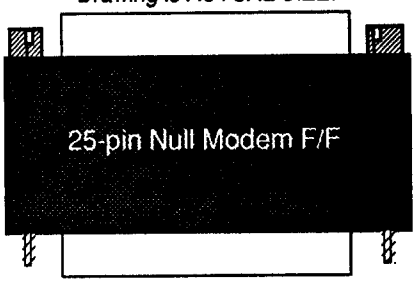

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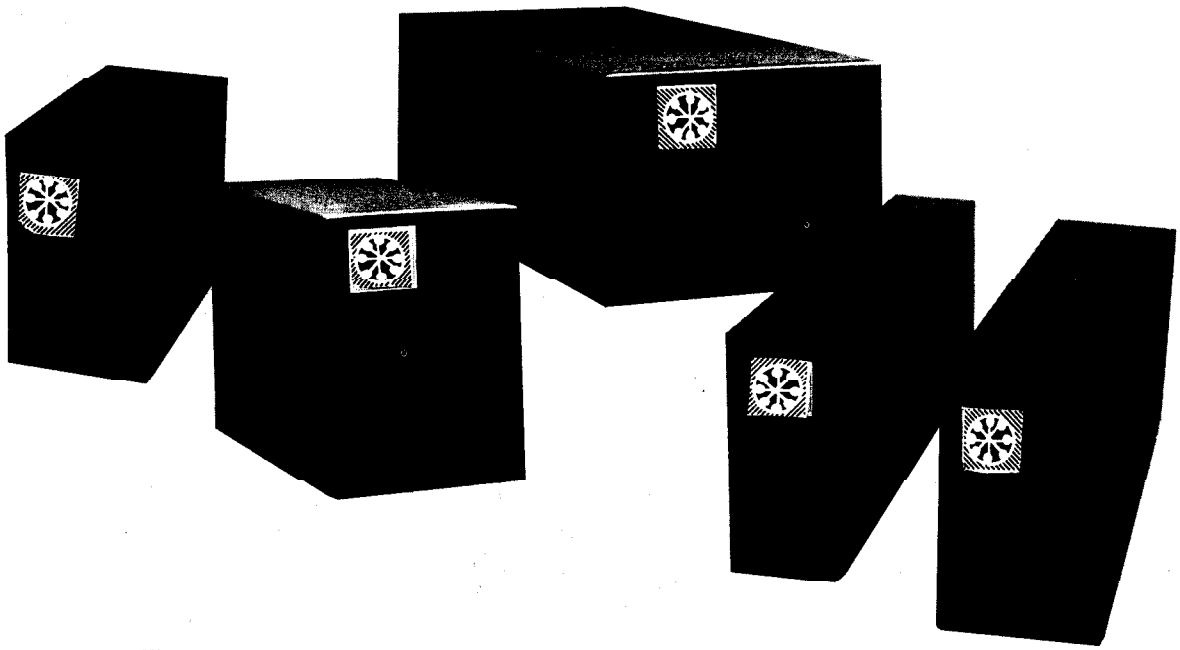

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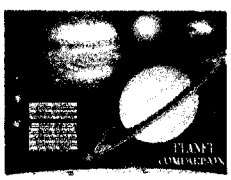

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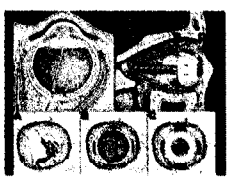

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