The Z-Letter

Newsletter of the CP/M and Z-System community

Number 11   April 1991
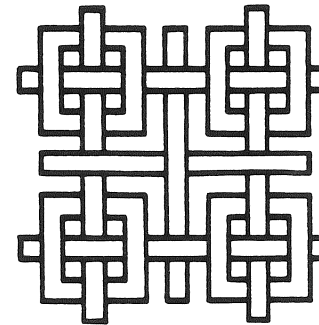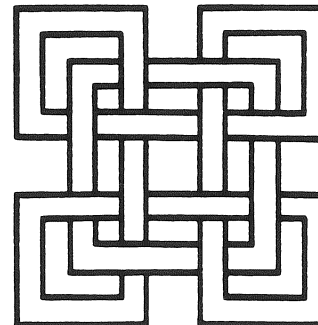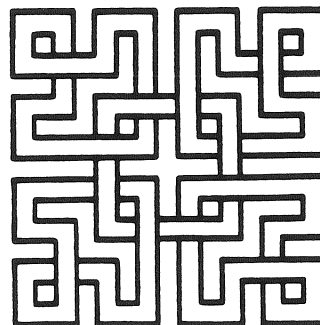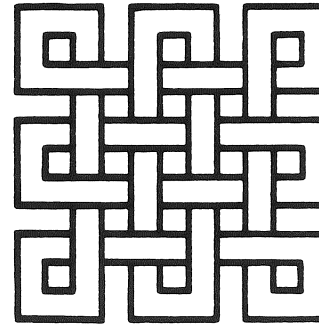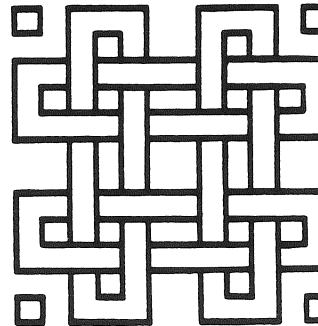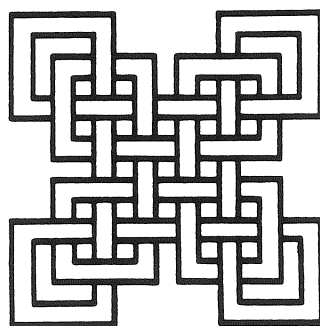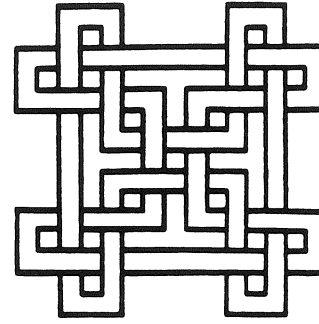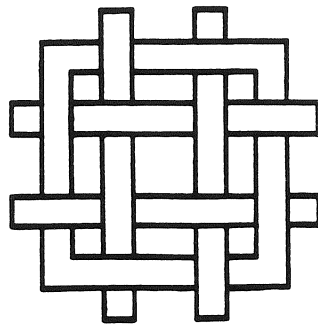
CP/M formats

TABLE OF CONTENTS

ABOUT THIS NEWSLETTER

Welcome to *The Z-Letter*, a newsletter for the community of CP/M and Z-system users. Everything in this issue is copyright © 1991 by the editor: David A.J. McGlone, Lambda Software Publishing, 720 S. Second Street, San Jose, California 95112-5820, phone (408) 293-5176.

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

Submitting material for publication

Material may be submitted on 5¼" diskette in almost any format, on 8" diskette, or printed or typewritten on clean white unlined paper. The deadline for submission of material is the end of the month. We cannot pay for articles, but for every article we publish, the author will receive that issue of *The Z-Letter* free. If the author has a subscription, the subscription will be extended for one issue.
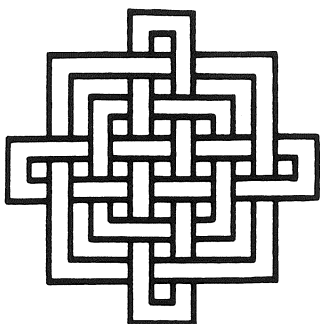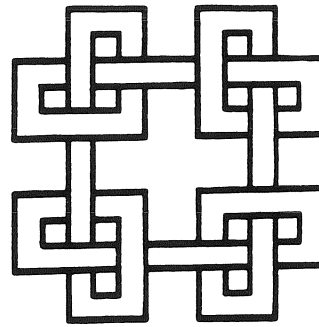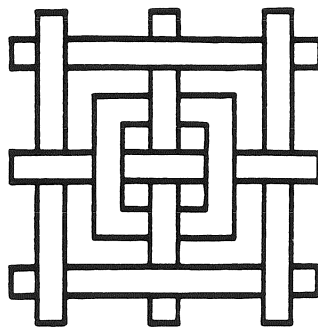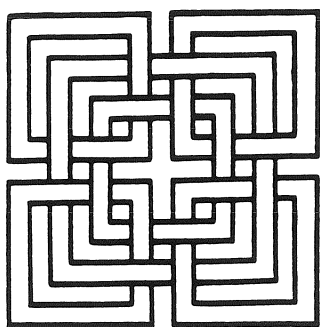
Letter policy

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

Subscriptions

The Z-Letter is a monthly publication, and subscriptions will be accepted for 1 or 2 years. A subscription starts with the first issue after the subscription payment is received. The cost is $15 per year for subscriptions mailed to U.S., FPO, or APO addresses. Canadian and Mexican subscriptions cost $18 per year. Other foreign subscriptions cost $45 per year. Subscriptions should be paid by check or international money order in U.S. dollars, mailed to Lambda Software Publishing. Back issues cost $2 apiece; every back issue is kept in print.

How to read your mailing label

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

Advertisements

There is no charge for either business or personal ads. Business ads are carried as a public service to the community. If you sell a product or provide a service to the community, please send us ad copy, either camera-ready or on disk. If you stop doing business in our community, please let us know so that we can drop your ad. Readers who find a product or service unsatisfactory, or discover that a vendor has gone out of business, are requested to inform us.

Subscribers may place personal ads at any time. Each ad will be run three times automatically. If the ad doesn't achieve its end in that time, it can be reinstated after a lapse of one issue. If the ad succeeds before it has run three times, please inform us so we can drop it at once.

Trademarks

All trademarks used herein are acknowledged to be the property of their owners.

Index available

The Z-Letter is indexed annually. The index for issues 1-5 appeared in issue 5. The index for issues 6-8 appears soon! Honest!

Lambda Software Publishing
720 South Second Street, San Jose, CA 95112-5820, phone (408) 293-5176

Regular products – quantities not limited

1. Spellbinder   Version 5.3H   **$60**
The Rolls Royce of word processors. This includes the software, the User's Guide which always came with the software, the Technical Manual and Macro Manual (which always cost extra), and a new Introduction. All four manuals come a 2″ binder in 8½ X 11″ format. Both generic and Eagle versions are available. (Ltek)

2. CP/M   Version 2.2   **$15**
Bought the hardware, and don't have the operating system? I can sell you the license and the manuals, making the copy you get from your user group legal. For many brands of computers, I can even send you the actual operating system with the BIOS for your machine. (DRI)

3. MagicIndex   Version 3.00   **$100**
Extends even Spellbinder's control of printers, and what it does to WordStar has to be seen, and then you still won't believe it! Used by us to produce this newsletter. Versions available are: SL (for Spellbinder or other ASCII word processor plus HP LaserJet or laser with HP emulation), SD (for standard word processors, Diablo 630 and similar daisy-wheel printers), WL (WordStar or WordStar clone plus laser), and WD (WordStar and Diablo). Please specify your word processor and printer when ordering. (CES)

4. Various computer manuals   **Each $15**
Complete manuals now available for: Eagle CP/M, Eagle 1600, Eagle PC Plus and Spirit, Otrona Attache, and Pied Piper. (Various companies)

5. Eagle Computer Users Group newsletter   July 87 to October 90   **$15**
All the issues done by the present editor of the only Eagle user group left. (Lambda)

6. *The Z-Letter* (back issues) $3/issue (US, Canada, Mexico), $5/issue (elsewhere)
Past issues of our newsletter for the CP/M and Z-System world. (Lambda)

7. *The Z-Letter* (subscription) $15/year (US), $18/year (Canada & Mexico), $45/year (all other)
Published monthly. (Lambda)

8. Z-Fonts catalog $3 (US, Canada, Mexico), $5 (elsewhere)
Shows samples of all the fonts available from Lambda for HP LaserJet printers, with instructions on how to choose what size, orientation, etc. you wish. (Lambda)

9. Z-Fonts   **$2 per font plus $2 per disk**
Once you've perused our catalog, you can order the fonts you want very cheaply. (Digi-Fonts)

Opportunity products – limited to quantity in stock

A. *CBASIC Reference Manual* $15
CBASIC comes with CP/M as CBAS2.COM, CRUN2.COM, and XREF.COM. However, the manual for the language was rarely included and is hard to find. Get your copy while you can. (DRI)

B. *The CP/M Handbook with MP/M* $15
A good introduction to CP/M by Dr. Rodnay Zaks. It assumes no prior knowledge of computers. This or another book like it is a must for a novice handed a CP/M computer and told "You're on your own." (SYBEX)

C. Nevada COBOL $15
This is an excellent COBOL which I've used myself for years. It's the only one I know of that ever sold for less than $700. Packaged for the Commodore 64, but will run on any CP/M computer. (Ellis)

D. Customizable diskette carriers $3
These sturdy little carriers hold up to three 5¼" diskettes safe from harm. Ideal to carry diskettes in a briefcase and protect them from your lunch, heavy books, etc. Front and back covers are clear pockets that will hold covers of your design, allowing you to customize these diskettes as you would a binder.

Disk copying – $10 per disk

I can copy most soft-sector double-density 5¼" CP/M formats, including Northstar and Apple II CP/M. Sorry, no hard-sector formats, no single-density formats, no 3½" or 8" formats, and no Commodore CP/M formats yet; some of this will change in the future. Copies can be CP/M to CP/M, CP/M to MS-DOS, or MS-DOS to CP/M; specify the format of the disks you send, and the format in which you want the copies. Both originals and copies will be returned.

Please note that this is a service provided to the CP/M and Z-System community. I assume that you are honest, and that you are the legal owner of material you ask me to copy. I refuse to accept any responsibility should this turn out not to be the case.

Note also that the price quoted above is for software you purchase elsewhere, or data diskettes you own. **There is no charge for copying software you buy from me in the format of your choice!** Software bought from Lambda will be sent to you in the disk format you request at no cost but the price listed for the software, so don't order Spellbinder and send me extra money for disk copying.

Please circle each item desired, and write the quantity desired in the margin next to the listing for the item. For item 6, list which issues you want. For fonts, use the order form from a copy of the catalogue.

Name: Company:
Address:
City, State, Zip:

Home Phone (   )   Business Phone (   )

Computer format in which software should be supplied:

Total money enclosed:

THE STATE OF THE ART

R. I. P. Irv Hoff

Irv Hoff, one of the gurus of our community, died this month, not unexpectedly, of cancer. Though I never had the pleasure of meeting him, his death is a loss to all of us. Like the other gurus we acknowledge, Irv originated or worked on a version of many of the programs we all use every day. A short, no doubt woefully incomplete list of his work includes BDO3 and BDO4, CHEK10, DIRR, FILE13, FILTA, FILTB, FILTW, FILTWC, FILT7A, FIND51, FIND52, FIND54, FORM7, FORMATIN, IMP-C128, IMP244, IMP245, JUSTIFY, KMD20 (with Wayne Masters), LISTT10, LISTT16, MCATXCAT, MDM740KP, NCAT32, NEAT7, OSMDM740, OXMDM740, SAP38, SAP40KP, SAP60, TABS7, TABSET, UNERA15, UNERA30 (with Bill Duerr and others), XCAT36. . .

Here are some of the tributes that have been circulating on the bulletin boards.

8 Apr 91 12:07:00 GMT

I am unhappy to relay the following message, which I downloaded from the Drexel Hill RCP/M. Irv Hoff was one of a select circle of CP/M gurus. He wrote much of the software that we CP/Mers use regularly. Even though he has most recently been involved in IBM, he will be missed by the CP/M community.

Ed Grey, FidoNet CPMTech

04-Apr-91 15:10:45

I'm sorry to report that Irv Hoff died peacefully at home yesterday, after a long and gallant battle with cancer. His wife, Arlene Hoff, called my wife in Seattle to give the news, but left no other information. I am attempting to call her, but I doubt seriously that I will be able to get through. I'm sure cards and/or flowers would be appreciated.

Arlene Hoff
12130 Foothill Lane
Los Altos Hills CA 94022

I will advise if I hear anything further.

Sysop John Deakin 76702,310

Mon Apr 15 19:02:30 PDT 1991

We, the AMSTRAD CPC USER GROUP Munich, would like to state our participation in the sorrow on the death of IRV HOFF, according to John Deakins's mail. May he rest in peace. And may he be enabled to lead some software developers into sane fields again! A lot of work has inspired programmers all over the world. May he be never forgotten!

Helmut Jungkunz Chairman

Apr 15 19:02:34 PDT 1991

Prior to the advent of personal computing, Irv Hoff was active in amateur radio RTTY, and made as many contributions to furtherance of that art as he made to PC software. I am not particularly well read in either field, but I recall seeing Irv's name often; I suspect a list of his accomplishments would be too long to post. I personally benefited from his disk utility for the Osborne 1.

I had the pleasure of but one RTTY QSO with Irv in the mid-to-late 60s. His spirit and energy will be hard to replace.

Bob Niemi, W9FNJ, Astronautics, Madison, WI

14 Apr 91 00:55:32 GMT

Sad to read that W6FFC is now a Silent Key.

I knew Irv from the late 70s, when he pioneered integration of PCs (the Heathkit H-89, etc.) with Ham RTTY. One of his inventions as I recall was an extended RTTY code, with LTRS-NULL shifting to lower case.

Irv was a leader in the RCPM movement that paved the way for today's BBS community. He

developed IMP (Irv's Modem Program) which was for many years the culmination of assembly language comm programs for CP/M. Irv worked tirelessly to help users bring up comm programs on their CP/M machines, no two of which supported the same comm API.

I still remember Irv sending HEX program dumps over 20 Meter RTTY to fellow hams back in the 70s.

Chuck Forsberg WA7KGX

Mastering CP/M formats

While all CP/M machines will run the same software, except when the software is specifically written to take advantage of features unique to a particular machine, each brand of machine, and sometimes each model, has its own *format*, or method of encoding data on a floppy disk. This is a reaction to a threat by IBM to sue personal computer makers if they all used the same 5¼" disk format, as they had with 8" disk drives.

Some CP/M machines can read formats other than their own, typically a half dozen of the most popular formats, such as Kaypro, Osborne, and Morrow. A handful of machines have a version of UniForm written for these. This software program from Micro Solutions (132 West Lincoln Hwy, DeKalb IL 60115, phone (815) 756-3411) allows a machine to read, write, and initialize a disk in a couple hundred different CP/M formats, as long as the machine has the right kind of disk drives. Machines so blessed include Actrix, Bondwell 12 and 14, Epson QX-10, Kaypros, Micromint SB180 and SB180FX (with original BIOS, not XBIOS), Morrows, Osborne 1 and Vixen, Televideos, and Xerox 820-II.

If you have a PC, there is a version of UniForm that runs on many (but not all) PCs. For using PCs to read, write, and initialize disks, 22DISK by Sydex (P.O. Box 5700, Eugene OR 97405, phone (503) 683-6033) is a better solution. 22DISK knows formats UniForm does not (and constantly adds news ones), 22DISK can copy from and to CP/M user areas, and 22DISK is more responsive to suggestions.

22DISK is actually a collection of programs. CTOD copies files from a CP/M to an MS-DOS disk; DTOC does the reverse. CDIR displays the directory of a CP/M disk, CERA erases files on a CP/M disk, CFMT initializes a CP/M disk, and CTYPE displays the contents of a CP/M file. All of these programs take the CP/M format as the first parameter, for example /AMP2 for an Ampro DSDD 48-tpi diskette; if you omit this parameter, 22DISK gives you the complete list. You page through this using your PC's PAGE DOWN and PAGE UP keys, use your arrow keys to move to the one you want, and hit ENTER to select the format. Programs being worked on include CREN, to rename a file on a CP/M disk, and CTOC, which would use two floppy-disk drives on a PC to copy files from one CP/M disk to another (that one was my idea).

Some CP/M formats still require special solutions. Neither 22DISK nor UniForm can do anything with hard-sector formats or the format used by a Commodore-64 running CP/M with a Z80 card or a Commodore-128 running CP/M-Plus. The only solution I know to translating Commodore formats is to buy a C-128, and use a program for it called Juggl'r, to copy from the Commodore format to one that 22DISK or UniForm can read.

Single-density formats, 8" formats, Northstar and Apple CP/M all require special disk controllers. Here Micro Solutions sells hardware solutions. Their MatchPoint controller, used with UniForm, allows a PC to read, write, and initialize Northstar and Apple CP/M disks. Other controllers in their CompatiCard series enable a PC to deal with single-density and 8" formats.

Once we can read, write, and initialize all these formats, there still is left the problem of providing boot disks for orphan computers. Do we still need one of every kind of computer to run SYSGEN, or is there some other way to copy the boot tracks? It appears we do not. Another program by Sydex, called ANADISK, can be used to copy a disk track by track, sector by sector, without attempting to interpret the

SPECIFICATIONS
Ampro Z80 Little Board/PLUS

CPU:
4 MHz Z80A, 8 bit-microprocessor

MEMORY:
64 kilobytes of dynamic RAM
4-32 kilobytes of EPROM

TIMER:
Z80A CTC (4 channels)
2 channels not used by Ampro software

SERIAL I/O:
Z80A SIO/0
Two RS-232C compatible ports
Software controlled baud rates
    Channel A - 75 to 38,400 baud
    Channel B - 75 to 9600 baud
Four standard RS-232C signals per port
    Data Out
    Data In
    Handshake Out
    Handshake In
    Two ground pins

PARALLEL I/O:
Centronics-compatibile printer port
Ten signals supported
    Data Bits 1-8 - Output
    Data Strobe - Output
    Printer Busy - Input
    12 ground pins

DISK I/O:

Drives supported:	1 - 4
Disk Controller:	WD1772
Data Rate:	250k bps (MFM), 125K bps (FM)
Sector Size:	128, 256, 512, or 1024 bytes
Phase locked loop:	digital (8 MHz)

Write precompensation: Software enabled
Drive capacity (formatted):
    Type 1 (40 track, 1 side) - 200K bytes
    Type 2 (40 track, 2 sides) - 400K bytes
    Type 3 (80 track, 1 side) - 400K bytes
    Type 4 (80 track, 2 sides) - 800K bytes

SCSI/PLUS BUS INTERFACE:
SASI Compatible
ANSI X3T9.2 (SCSI compatible)
SCSI/PLUS Initiator compatible
Uses NCR 5380 SCSI bus controller

POWER:
Same power connector and voltages as 5¼"
disk drives.
    +5VDC at 0.95A
    +9 to +12VDC at 0.05A

ENVIRONMENT:

Temperature:	0 to 32° C, operating
Humidity:	5 to 95%, noncondensing
Altitude:	0 - 10,000 feet

SIZE:
7.75" x 5.75" x 0.75"

SOFTWARE:
Boot program in 2732 EPROM (standard)
Options (see price list for details)
    CP/M 2.2 with ZCPR3 enhancements
    Little Board/Plus system utilities
    BIOS and utilities source code

DOCUMENTATION: (Optional)
Little Board/Plus Technical Manual
Little Board Plus Software Manual

EXPANSION MODULE:
The Ampro Z80 project board is available
for special purpose I/O. The board stacks on
top of the Little Board and plugs into the CPU
socket and provides breadboard space for wire-
wrap applications.

Exclusive manufacturing rights for the Ampro
Z80 Little Board have been purchased from
Ampro by Davidge Corporation. Technical
support and repair service is available directly
from Davidge. Ampro no longer supports the
product.

OEM PRICE LIST
AMPRO Z80 LITTLE BOARD
Manufactured under license by Davidge

HARDWARE

A60060-2	Ampro Series 1B Little Board Plus Computer	250.00
A60060-3	Ampro Little Board without SCSI	240.00
A60156	Project Board/80	75.00

SOFTWARE

A60101-1	CP/M and ZCPR3 (5¼", 40 track disks)	65.00
A60101-2	CP/M and ZCPR3 (5¼", 80 track disk)	65.00
A60101-3	CP/M and ZCPR3 (3½" disk)	75.00
A60103-1	CP/M, ZCPR3, BIOS Source (40 track disks)	100.00
A60103-2	CP/M, ZCPR3, BIOS Source (80 track disks)	100.00
A60103-3	CP/M, ZCPR3, BIOS Source (3½" disk)	110.00

LITERATURE

A74010	Little Board/Plus Technical Manual	15.00
A74025	Project Board/80 Technical Manual	10.00
A74006	Z80 System Software User's Manual	15.00
A74015	Z80 Hard Disk Software User's Manual	15.00
A74022	Z80 Hard Disk Backup Software Technical Manual	10.00
A74011	CP/M 2.2 Manual	15.00

REPAIR SERVICE

Flat rate repair for any serviceable Little Board	75.00

VOLUME DISCOUNTS

10-24 units - 5%; 25-49 - 10%; 50-99 - 15%; 100+ - 20%

Prices are in US dollars. All products shipped FOB Buellton, CA. Prices effective 10-1-90 and subject to change without notice. All orders are shipped UPS Blue, C.O.D. unless other arrangements made at time of order.

format. It should be possible to copy boot disks using ANADISK, and the copy should also be a working boot disk! A controller that can handle single density should be used, since some otherwise double-density formats only use single density for the boot tracks.

How much of this can I attest from my own experience? I have used UniForm on the SB180, the SB180FX, and on a PC. They work. 22DISK also works well. I have bought a MatchPoint card and used it to read, write, and format Apple II CP/M disks. I will report more on the 8", single-density, and ANADISK after I've installed and used them.

WHAT IS S-100 TO ME?

by Herbert R. Johnson
Copyright © 1991 Herbert R. Johnson

The vintage S-100 bus provides a simple and inexpensive introduction to computing hardware and software. After some design history, I'll briefly run through its functions, pin by pin. A later article will describe bus timing and operations. Some of the information in this article was derived from *The S-100 Bus Handbook* by Dave Bursky, Hayden Book Co, 1980. Other information came from numerous manufacturer's schematics and documents.

For most of us in the personal computer industry, December 1975 marked the beginning of personal computing, with the publication in *Popular Electronics* of a construction article for the first personal computer, the Altair. MITS, Inc. offered a $400 kit of blinking lights, switches and a processor, the Intel 8080. Although this computer kit had no memory, no serial or parallel ports and no software, MITS received hundreds of orders immediately. Why? Because it offered *expandability* via the "S-100 bus". Soon an industry developed as a growing number of companies provided "S-100 compatible" products and whole systems. Some of these companies survive to the present: Compupro (Viasyn) and Cromemco, for example. In addition, magazines carried construction and modification articles, particularly important since early products were expensive and the typical hobbyist built and designed his own systems.

Fifteen years later, anyone can buy a used IBM-compatible or old Mac for a few hundred dollars, complete and ready to run applications.

S-100 systems of fifteen, ten or even five years ago are now in scrap heaps and flea markets. So, why bother even discussing "dead technology"? For several good reasons, many of which apply to "obsolete" computers in general. First, S-100 computers are cheap. Second, they are simple both in hardware and software. Third, they are expandable. Fourth, for some of us who used them in the 70s and 80s, they represent a personal and professional investment. Fifth, why get rid of something that works?

I received my Electrical Engineering degree in 1976, and worked with the personal and professional small computers of that time. My first computer was an IMSAI 8080, a clone of the Altair. I owe a lot to S-100 technology, and today I pay some of that back (and my bar bills) by reselling some of that equipment to hobbyists and professionals.

Incidently, by "vintage" S-100, I mean the original Altair/IMSAI bus, before the changes and standardizations that converted it in 1979 into the IEEE-696 bus, which is similar but partially incompatible. The IEEE-696 market is in high-end industrial-control and software-development systems. Old S-100 technology is less accessible than it should be, generally due to a lack of documentation or software, and a lack of interest in old equipment. To the novice, old S-100 systems nonetheless look tempting. They *are* rather large, for the most part; yet, at the component level they are simple, even elementary. Many students and hobbyists of today see yesterday's technology as
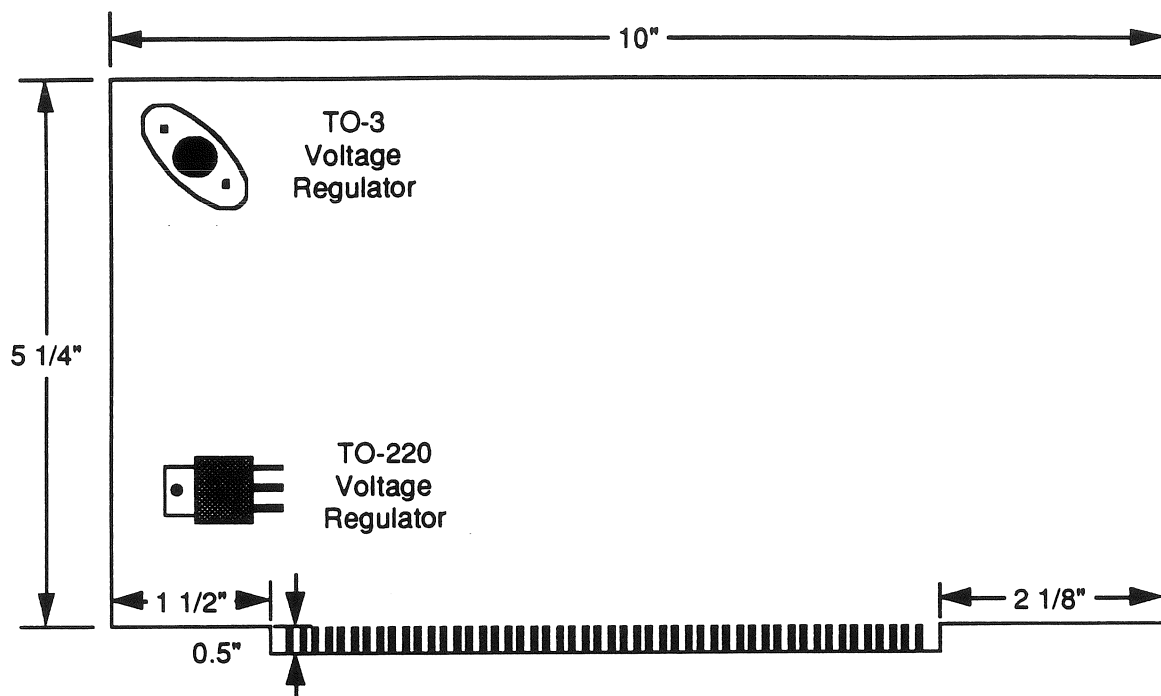
Figure 1 shows dimensions: 10" width, 5 1/4" height, TO-3 Voltage Regulator, TO-220 Voltage Regulator, 1 1/2", 0.5", 2 1/8".

Figure 1. Dimensions and general layout of an S-100 card.

an inexpensive and elementary starting point for their education.

The basic S-100 bus

Figure 1 shows a typical S-100 card from the component side. The edge connector of this card has 100 pins, 50 on each side of the card, at intervals of 0.125 (1/8) inches. These cards are in turn plugged into a *backplane* of card-edge connectors, itself another printed-circuit board but usually with very little electronics, traditionally called a *motherboard*. A typical system has several S-100 cards and one backplane. If you can become familiar with this profile, you can pick out a S-100 system from a pile of other more-or-less proprietary systems. Take an S-100 card (or a same-scale mockup from Figure 1) with you when you shop.

The function of the bus is to provide power and communications between the various boards. With older cards in particular, you may have the CPU on one card (not chip!), the memory on another, and input/output on a third. Again, for the new computerist, this division of function makes for easier learning, design, and repair.

Figure 2 lists the S-100 lines in physical order. *Power lines* are obvious in function. *Address and data lines* select a particular device or memory location for access and data transfer. *Control lines* select the nature of function or data transfer. *Front-panel lines* provide for general computer control. There are also unused lines, some later used in the IEEE-696 bus. Signals preceded by a / are active when at logic 0 (low); otherwise signals are active at logic 1 (high). In the list, category dir refers to the signal direction relative to the processor card, or to front-panel signal direction for type fr panel signals. Line numbers marked with an * correspond to signals that are rarely used, or vary among manufacturers, or are otherwise particularly troublesome.

To understand the functions of each signal line, I recommend that you refer to documentation on the most popular S-100 microprocessors: the Intel 8080 or 8085, or the Zilog Z80. Intel 8080 microprocessor operations, such as memory or I/O access, and its handling of wait states and interrupts, is the original standard for the signals and timing implemented on the S-100 bus. Do not be dismayed by the quantity and variety of these lines; for any given function, only a few are at work.

Bimonthly Newsletter

This quality, 12-page newsletter is prepared on a daisywheel printer in two-column format and is commercially printed. Content includes letters, reviews, hardware and software articles, programming information on a number of languages (assembler, BASIC, C, and Pascal), and vendor reports. Recent issues feature the first two parts of a series on professional software testing (using Pascal in its examples). Another series on home repair of the '89 begins later in the year. **Staunch** supports CP/M 2.2, HDOS 2.0, HDOS 3.0, and the just-released HDOS 3.02 (listed below). Most issues feature a list of newly-available, public domain software, much of it written by **Staunch** subscribers or released by vendors. Most back issues are still available. Subscriptions are $12/calendar year.

HDOS Systems--Require Heath Hardware

HDOS SYSTEM (By Heath Co.)   Version 2.0 $15
HDOS MANUAL (By Heath Co.)   Version 2.0 (Prepared by Daniel N. Jerome) $72
  The last version produced by Heath Co. and placed in the **public domain** (source and object code plus documentation) in the summer of '88 at **Staunch**'s request. The distribution system is a 4-disk set. The manual for ver. 2.0 may be had in either machine-readable or hardcopy form. Individual chapters (1 thru 7) are available separately. Chapters 1, 2, and 7 have been extensively updated from Heath's original (1979/80) edition to cover soft-sector media (introduced in '81) and undocumented features.

HDOS (By W.G. Parrot and R.L. Musgrave) Version 3.0 $25
HDOS (By Richard L. Musgrave)   Version 3.02 $75
  These enhanced versions of HDOS add more commands to the command processor (SYSCMD.SYS) and system utility (PIP.ABS), introduce or improve batch processing, and introduce user areas. Unlike ver. 2.0, they **remap** memory, so **require** an H-8 capable of booting CP/M. Virtually all '89's but the very earliest will boot these systems. They are compatible with most software written for ver. 2.0. Ver. 3.0 **presumes** knowledge of 2.0 and the on-disk documentation is minimal. **Staunch** includes a 38-page booklet with the package as a more detailed reference guide. Ver. 3.02 includes an 1,100-page manual (written by Daniel N. Jerome) with 3-ring binder and is shipped UPS in the contiguous 48 states.

Software for CP/M and HDOS

Lucidata Pascal (By D.Gibby and L.Reeve) Version 3.8 $25
  A substantial subset of the language developed by Niklaus Wirth. The compiler translates your ASCII source code file into a p-code file. The latter is then interpreted by a run-time system. If execution speed or program independence from the run-time package is critical, a command-line pragmat may combine the run-time system with the p-code file or an included p-code program can translate p-code files to source for Microsoft's M80 assembler. Not as extended as Borland's **Turbo**, nor as fast during compile. A very reasonable alternative to **Turbo** for CP/M; the fullest Pascal implementation presently available for HDOS. Particularly nice for porting software between the two systems. No special terminal is required. Includes a 100-page manual.

MONEY$WORTH (By David Powers) $6
  A financial package for setting up categories, recording, and summarizing income and expense transactions. The categories are user-defined. A budget forecasting feature uses a spreadsheet-like display. Data files are ASCII, so easily edited. Requires MBASIC and the H-19/89 terminal.

Staunch General Software Catalog $6
  Staunch's holdings are too extensive to list here. An on-disk catalog of software for CP/M and HDOS is available. Much of the software has been released to **Staunch** by various vendors as they concentrate on PC's or close down. It also includes material contributed by **Staunch** subscribers. The catalog **continues** to grow!

Note: Prices include shipping in the continental U.S., first-class for most items, UPS for the HDOS 3.02 package. Supported disk formats are Heath/Zenith soft-sector (H-37) and 10-hard-sector (H-17); most 40-track, single- or double-sided, soft-sector CP/M (such as AMPRO, Cromemco, Kaypro, Osborne, Televideo, or Xerox); and PC-XT.

Kirk L. Thompson
Editor, **The Staunch 8/89'er**
P.O. Box 548, West Branch, IA 52358
Voice: 319-643-7136 (eves and weekends)

Power lines

The electrical power to each card is provided through the backplane from a power supply. The voltages available are ±18 volts, ±8 volts, and of course ground. These voltages are regulated on each card to the more typical +5 volts (and sometimes -5 volts), +12 volts, and -12 volts. So, another identifying characteristic of S-100 cards are the TO-220 or TO-3 case style voltage regulators along the inner edges of each card (see Figure 1). Later, some manufacturers removed these and provided 5 and 12 volts directly to the bus. These cards are generally marked "+5V only" to avoid frying them in 8V systems!

Address lines

As the first microprocessor for the S-100 bus was the Intel 8080, the bus provides only 16 address lines, A0 through A15. They are scattered all about and are in no sensible order by today's standards. Although sixteen bits of address provide only 65000 or so address locations, there are ways to extend memory beyond this "barrier". Another consequence of the use of the 8080 processor is the limitation of I/O addressing to the first 8 bits (A0-A7) of the available 16 address lines, providing only 256 I/O addresses.

Data lines

These are divided into 8 input lines (from the bus into the processor card) DO0 through DO7, and 8 output lines (from the processor into the bus) DI0 through DI7. They carry byte-sized data, with no parity line to verify their contents. Why separate lines for input and output data? Again, historical reasons involving RAM chip designs.

Control lines

There are many sets of control lines. One is for *external events:* interrupts VI0 through VI7, NMI and /PINT, tell the processor card something has occurred that requires immediate attention. The processor shows its availibility for interrupts with PINTE (interrupts enabled). *Processor-state lines* tell the other cards about a particular processor action, like memory read or I/O write. These lines include SM1 (instruction access), SOUT (I/O data output from the processor), SINP (I/O data input to the processor), SMEMR (memory read to the processor), SINTA (interrupt acknowledged), SSTACK (stack operation, a rarely used signal), SHLTA (processor is *halted* or stopped), MWRT (memory write from the processor) and /SWO (memory or I/O write from the processor). These processor state lines are active and readable when the status strobe line /STSTB is active.

Processor-control lines change the operation of the processor. They include device-ready lines PRDY, XRDY and XRDY2 that put the processor in a *wait* state (as signaled by PWAIT from the processor), stretching processor access time during reads or writes to slow devices. Similarly, /PHOLD is sent to the processor to hold the processor (as signaled by PHLDA, hold acknowledge) until released. /PRESET resets the processor and other cards to their original states. *Timing signals* include PHASE 2 (and the less-often used PHASE 1) as the master clock signal of the bus; /CLOCK as a 2MHz timing signal; PSYNC from the processor to "tick" each processor operation. *Processor-disable lines* include /STADSB (status disable) to disable the processor-state lines; /CCDSB (control disable) for the processor-control lines; and /ADDDSB and /DODSB to disable the address and data-out lines respectively (the data-in lines can be ignored when the processor is disabled). Why disable the processor card? So that another card can control the bus!

Front panel

Finally, from the original Altair/IMSAI design, are the *front-panel lines*. These and other S-100 systems included a front panel of switches and lights which not only showed the status of the processor, but allowed for manual control of its operation, even to individual operation cycles! These lines include UNPROT (unprotect memory), SS (single step processor execution), /SSWDSB (sense switch disable), XRDY (front panel ready), PROT (protect memory), and RUN (run the processor). /POC (power-on clear), from either the front panel or the processor

card, provides a reset during the first moments of system power-up. /EXTCLR (external clear) provides for a seperate manual reset line from the reset line. MWRITE (memory write) must be generated by the front panel or the processor card.

As S-100 products matured, including designs without front panels, some of these lines fell into disfavor and were no longer used, which sometimes creates incompatibilities.

Next Time

In the next article, I will demonstrate the operation of the most critical of these lines via the operation of a typical and useful CPU processor board: the Cromemco ZPU Z80 processor card.

About the Author

Herb Johnson lives in Colorado with a 17th-Century philosopher and three cats. From a basement of "classic" computers, he supplies the notorious "Mr. Bitz" with S-100 products to sell and chats with his clients. He can be contacted at 1519 Mt Everett St., Colorado Springs CO 80909, (719) 578-0997.

SOUND POTENTIALS CP/M PUBLIC-DOMAIN SOFTWARE CATALOG

We publish a catalog that lists the titles of 720 CP/M library files from which you can pick and choose. The titles are current up to 1990. The catalog lists each title, author, date, size of library, and a description. We charge you a copying fee of only five cents per 1K of library file copied. We can format for over 180 5¼" disk formats, both 48- and 96-tpi, and we charge you no extra for your format. We offer discounts for large orders if your disk format holds over 300K. You receive your selections plus our catalog on disk and a library utility to remove the files.

We also offer a data-copying service to copy data between any of the formats we support. Full details included with the catalog.

As a special introduction to the public domain of CP/M, we have put together a Sampler of some of the best utilities and word processing programs. This large collection is available on your disk format for $10.00 plus $4.00 shipping and handling. We throw in the printed catalog for $1.00 more ($15.00 total). If you just want the printed catalog and other info, send $2.00.

SOUND POTENTIALS
BOX 46
BRACKNEY, PA 18812

Art credits

The interlace designs on the cover of this issue were chosen to represent the way a casual user feels about the problem of copying files from one CP/M format to another; one knotty problem after another. They were taken from page 18 of *Geometric Design and Ornament* by Edmund V. Gillon Jr., Dover Publications, Inc., New York, 1969. Figure 1 on page 11 was executed by Deborah Snavely on an Apple Macintosh.

SAGE MICROSYSTEMS EAST

Selling & Supporting the Best in 8-Bit Software

- Automatic, Dynamic, Universal Z-Systems

    - Z3PLUS: Z-System for CP/M-Plus computers ($70)
    - NZCOM: Z-System for CP/M-2.2 computers ($70)
    - ZCPR34 Source Code: if you need to customize ($50)

- ZSUS: Z-System Software Update Service, public-domain software distribution service (write for a flyer with full information)

- Plu*Perfect Systems

    - Backgrounder ii: CP/M-2.2 multitasker ($75)
    - ZSDOS/ZDDOS: date-stamping DOS ($75, $60 for ZRDOS owners)
    - ZSDOS Programmer's Manual ($10)
    - DosDisk: MS-DOS disk-format emulator, supports subdirectories and date stamps ($30 standard, $35 XBIOS BSX, $45 kit)
    - JetFind: super fast, extemely flexible text file scanner ($50)

- ZMATE: macro text editor / customizable wordprocessor ($50)

- PCED — the closest thing to ARUNZ and LSH (and more) for MS-DOS ($50)

- BDS C — including special Z-System version ($90)

- Turbo Pascal — with new loose-leaf manual ($60)

- SLR Systems (The Ultimate Assembly Language Tools)

    - Z80 assemblers using Zilog (Z80ASM), Hitachi (SLR180), or Intel (SLRMAC) mnemonics
    - linker: SLRNK
    - TPA-based ($50 each) or virtual-memory (special: $160 each)

- ZMAC — Al Hawley's Z-System macro assembler with linker and librarian ($50 disk, $70 with printed manual)

- NightOwl (advanced telecommunications, CP/M and MS-DOS versions)

    - MEX-Plus: automated modem operation with scripts ($60)
    - MEX-Pack: remote operation, terminal emulation ($100)

Next-day shipping of most products with modem download and support available. Order by phone, mail, or modem. Shipping and handling $3 per order (USA). Check, VISA, or MasterCard. Specify exact disk format.

Sage Microsystems East
1435 Centre St., Newton Centre, MA 02159-2469
Voice: 617-965-3552 (9:00am – 11:30pm)
Modem: 617-965-7259 (pw=DDT) (MABOS on PC-Pursuit)

Figure 2: *Altair/IMSAI S-100 signals by category.* **dir** *is relative to the processor or front panel, depending on signal type. Pins 1 (leftmost) through 50 (rightmost) on the component side:*

pin	signal	type	dir	function
1	+8V	power		+8 volts
2	+18V	power		+18 volts
3	XRDY	fr panel	out	external ready to processor
4	VI0	control	in	vector interrupt line 0
5	VI1	control	in	vector interrupt line 1
6	VI2	control	in	vector interrupt line 2
7	VI3	control	in	vector interrupt line 3
8	VI4	control	in	vector interrupt line 4
9	VI5	control	in	vector interrupt line 5
10	VI6	control	in	vector interrupt line 6
11	VI7	control	in	vector interrupt line 7
12*	XRDY2/NMI	control	in	2nd external ready OR Z80 interrupt
13-17	*not used*			
18	/STADSB	control	in	disable processor status lines
19	/CCDSB	control	in	disable processor control lines
20	UNPROT	fr panel	in	unprotect memory
21	SS	fr panel	out	single step processor
22	/ADDDSB	control	in	disable processor address lines
23	/DODSB	control	in	disable processor data out lines
24	PHASE2	clock	out	primary processor clock line
25*	PHASE1	clock	out	alternative processor clock line
26	PHLDA	control	out	processor in HOLD condition
27	PWAIT	control	out	processor in WAIT condition
28	PINTE	control	out	processor permits interrupts when active
29	A05	address	out	address line 5
30	A04	address	out	address line 4
31	A03	address	out	address line 3
32	A15	address	out	address line 15
33	A12	address	out	address line 12
34	A09	address	out	address line 9
35	DO1	data	out	data output line 1
36	DO0	data	out	data output line 0
37	A10	address	out	address line 10
38	DO4	data	out	data output line 4
39	DO5	data	out	data output line 5
40	DO6	data	out	data output line 6
41	DI2	data	in	data input line 2
42	DI3	data	in	data input line 3
43	DI7	data	in	data input line 7
44	SM1	state	out	processor instruction fetch signal
45	SOUT	state	out	processor I/O write signal
46	SINP	state	out	processor I/O read signal
47	SMEMR	state	out	processor memory read signal
48	SHLTA	state	out	processor HALTed signal
49*	/CLOCK	clock	out	2MHz clock signal
50	GND	power		logical and power ground

Pins 51 (rightmost) through 100 (leftmost) on the circuit trace side:

pin	signal	type	dir	function
51	+8V	power		+8 Volts
52	-18V	power		-18 Volts
53*	/SSWDSB	fr panel	out	sense switch disable (of data inputs)
54*	/EXTCLR	fr panel	out	clear (reset) I/O devices on bus
55	not used			
56	/STSTB	control	out	processor status strobe signal
57-64	not used			
65	/MREQ	control	out	Z80 memory request
66	/REFRESH	control	out	Z80 processor DRAM refresh
67	not used			
68*	MWRT	ctrl/frp	out	memory write from processor or front panel
69	/PS	control	in	write-protect status of current memory board
70*	PROT	fr panel	out	input to write-protect status of memory board
71*	RUN	fr panel	out	stops processor
72	PRDY	control	in	controls run/WAIT state of processor
73	/PINT	control	in	request for interrupt to processor
74	/PHOLD	control	in	request for HOLD to processor
75	/PRESET	control	in	forces processor to reset state
76*	PSYNC	control	out	marks beginning of each processor cycle
77	/PWR	control	out	active when processor writes (I/O or memory)
78	PDBIN	control	out	active when processor reads (I/O or memory)
79	A00	address	out	address line 0
80	A01	address	out	address line 1
81	A02	address	out	address line 2
82	A06	address	out	address line 6
83	A07	address	out	address line 7
84	A08	address	out	address line 8
85	A13	address	out	address line 13
86	A14	address	out	address line 14
87	A11	address	out	address line 11
88	DO2	data	out	data output line 2
89	DO3	data	out	data output line 3
90	DO7	data	out	data output line 7
91	DI4	data	in	data input line 4
92	DI5	data	in	data input line 5
93	DI6	data	in	data input line 6
94	DI1	data	in	data input line 1
95	DI0	data	in	data input line 0
96	SINTA	control	out	acknowledge signal for PINT request
97	/SWO	control	out	processor in write status
98*	SSTACK	control	out	processor in stack read/write status
99	/POC	fr panel	out	power-on clear signal
100	GROUND			power and signal ground

CP/M Software

SCRIPT OF THE MONTH CLUB

Managing named directories
by Jay Sage

Most of my scripts are really pretty simple, and the one I offer you this month is a good example. This is an alias for managing named directories.

Al Hawley's utility EDITNDR is a wonderful little tool for editing your named directory assignments. However, I don't run it very often and, therefore, forget its syntax. Of course, it is easy enough to invoke it with the // option to display the help screen, but since I use it pretty much exclusively for one function, it was much easier simply to create an alias.

At this point I have most of my named directories defined as I like them. From time to time, however, I want to assign a name to a new area on the disk. My NAME alias makes that very easy to do. For example, if I want to give user area 7 on drive C the name UTILS, I enter the command

        name c7: utils

That's all there is to it! Here's the ARUNZ script that does this:

        NAME   b0: editndr $td1$tu1: $tn1\x

Now for the explanation. I keep EDITNDR in B0:, which is not on the path, so I invoke it with an explicit directory prefix. I tend to do this in general to minimize the time the system spends looking for the file. I would not do it when entering a command manually, but I don't hesitate to let my scripts do extra typing to accomplish a job better!

That jumble of ARUNZ parameters following the command verb generates an expression of the form DU:NAME\X. The drive/user prefix, generated by the expression $td1$tu1:, tells EDITNDR which area to work with. Note that one can invoke NAME with a named directory, since the parameter expansion will convert it to DU: form. Thus, one can rename a directory using a command of the form

        name   oldname: newname

You can also delete a name entirely, as with

        name gone:

The parameter $tn1 supplies the name to use for the directory and guarantees that it has the proper form – a single token of up to eight characters. Any file extension included on the command line will be ignored.

The \X at the end is the EDITNDR command-line option to exit the program, allowing the whole operation to take place silently. EDITNDR is quite flexible about how information is passed to it. There could have been spaces between the DU: and the directory name and between the name and the \X option. I don't mind making scripts do extra typing, but not when it accomplishes nothing and just makes the ALIAS.CMD file bigger than necessary.

As usual when I explain my aliases here, I notice things that never occurred to me before. The present alias does not deal with directory passwords. These can be entered after the directory name. We would extend the script as follows:

        NAME   b0: editndr $td1$tu1: $tn1 $tn2\x

Then the command

        name   b3: private   secret

would give area B3: the name PRIVATE and the password SECRET.

I also noticed a defect in the operation of the script when an illegal specification is made for the area to give a name to. This might be a drive or user number out of range or a nonexistent directory name. In that case, $td1$tu1: returns the DU: for the current directory. This could result in destroying the

name of the directory you are in.

I've never had this happen, as far as I remember, but if you like to do things rigorously, here's how. ARUNZ has a second parameter for converting file specifications to DU: form, the parameter $tc1. This parameter behaves differently when presented with an illegal directory — it just returns the specification unchanged. In other words, it only converts valid directory prefixes.

Assuming we have drives A through D, directory A3: with the name WORK:, and no directory with the name NOWAY, then the following values would be returned for the two possible conversion expressions when the current directory is B7:

command-line token	$td1$tu1	$tc1
a3:nice	A3	A3:NICE
work:nice	A3	A3:NICE
noway:nice	B7	NOWAY:NICE
f13:bad	B7	F13:BAD
name	B7	NAME

Based on the above differences, we can invent the following more robust script:

```
NAME
    if ~ nu $ts1
    and ~ eq $tc1 $td1$tu1
      echo I%> nvalid directory spec "$ts1"
    else
      editndr $td1$tu1: $tn1\x
    fi
```

The only part of this you don't know about already is the parameter $ts1. This returns the actual directory prefix, if any, without a colon.

One other aspect might need clarification. That is the line with the AND command (we talked about that command last time). You might be

wondering why there is a colon in front of the $tc1 parameter. The string testing options (such as EQual, NEqual, NUll) in the flow control commands (IF, AND, OR) do not really test strings; they test file names. Directory prefixes are ignored. Thus

```
if    eq    a: b. c    d: b. c
```

will return TRUE. The expansion of the parameter $tc1 has a colon after any directory specification. To force the directory specification to be treated as a file name, we insert the leading colon. The colon generated by $tc1 acts as a delimiter that terminates the file name.

This last point is a little tricky to understand. What I recommend is that you experiment with the flow control commands. For that, I use the following script:

```
IFTEST
    if $*
      echo T%> est is %< TRUE
    else
      echo T%> est is %< FALSE
    fi
```

Then you can make tests very quickly and see the results immediately. For example, you will see that

```
iftest    eq    a: b. c    d: b. c
```

and

```
iftest null test:
```

both display **Test is TRUE** on the screen. By the way, you've been so nice about reading all the way to this point that I won't charge you anything extra for the additional IFTEST alias!

LETTERS

April 5, 1991

Dear David,

I am glad to see *The Z-Letter* coming regularly

again. I always find some useful information, some tempting software offers, and good discussion from readers. I want to contribute to some of the discussion. I guess first I'd like to

Socrates

Z - N O D E 3 2

POST OFFICE BOX 12, SOUTH PLAINFIELD, NJ 07080

modem: (201) 754-9067 24 hours daily

Serving Today's CP/M and ZCPR Users
With the best in 8-bit computing

CP/M Support

You have been told that CP/M is dead. Don't you believe it. To paraphrase a famous quote, reports of our demise are premature. We haven't died; we have transformed!

Since the earliest days, CP/M has attracted the best in programming talent. Some sold their work commercially but many more donated their efforts to the public domain. Today, most commercial programmers have moved on. But the others remain, as active as ever. This presents you with an interesting dilemma: Most of the new programs are free or nearly so, but stores won't carry them! How can you get support?

There are four avenues of support for today's CP/M user:
—   Remote Access Systems (BBS's)
—   User Groups
—   Mail Order Companies
—   Magazines and Newsletters

REMOTE ACCESS SYSTEMS

Remote Access Systems (RAS or sometimes called Bulletin Boards), are computers set to automatically answer the telephone. You can send and receive messages, programs and files on a RAS. You need a modem and a communications program.

There are literally hundreds of systems that support CP/M. Most are free to the caller. *Socrates Z-Node 32* is such a system. Some of the most active are listed at the end of this paper. Find one that appeals to you and call. You should be able to find the North American listing of remote CP/M systems on any of these. Ask the sysop if you need help.

One problem with getting support by modem is the cost of the calls. Galaxy Starlink offers an "after hours" service through Tymnet that allows you to make modem calls to some 200 cities for as little as $1.50 per hour plus $10.00 per month. Call 1-505-881-6988 for more information.

USER GROUPS

User groups are excellent sources of help. A comprehensive list of groups is printed in the back of *The Computer Shopper* each month. Groups vary considerably based on their size and the relative experience of their members, so check out the group before you join. Since a group is only as good as its members, you should plan to take on some responsibilities. You will find your efforts amply repaid.

MAIL ORDER COMPANIES

There are many companies that continue to specialize in CP/M. *Chicago's First Osborne Group* publishes a file named CPMSRC-I.LZT which lists most such firms. You can get this list from your user group or on a RAS. Or write to CFUG at Box 1678, Chicago IL 60690. Enclose a couple dollars to pay expenses.

Special mention should be made of the *Z-System Software Update Service*. Users of ZCPR can subscribe for regular updates of the best Z-System programs. Special editions are also available. For example, there is a collection of some 360 command files in a set of six disks for just $36, or over a full megabyte of help files for $20. Send $2 to *Sage Microsystems East*, 1435 Centre Street, Newton Centre MA 02159-2469 to receive a catalog disk. Be sure to tell them what format you have!

MAGAZINES AND NEWSLETTERS

If you want 300 slick pages of full page advertising and press releases disguised as product reviews, you will be disappointed. Our publications reflect the tradition of user involvement in CP/M. You may even find yourself asked to write an article on something you've learned! Some publications to look at:

THE COMPUTER JOURNAL is the top-of-the-line in CP/M periodicals. Topics range from tutorials to advanced work in the operating system. Heavy emphasis on Z-System. Published six times a year. Subscriptions are $18 per year. *The Computer Journal*, 190 Sullivan Crossroads, Columbia Falls MT 59912.

PIECES OF EIGHT is published by the *Connecticut CP/M Users Group*. Great degree of user involvement reflects the diverse interests of the members. Recent articles include making Basic 'Z-Smart', and installing a RAM disk. Membership including newsletter is $15 per year. *CCP/M*, c/o Tom Veile, 26 Slater Avenue, Norwich CT 06360.

SLKUG NEWS is the newsletter of the *St. Louis Kaypro Users Group*. Don't let their name fool you — they support all kinds of CP/M machines. Articles include reviews of new products, offers for group purchases and tips on using applications. Membership including newsletter is $18 per year. *SLKUG News*, 5095 Waterman Avenue, St. Louis MO 63108.

By the way, we are compiling a listing of all CP/M newsletters and periodicals. If you know of one that you feel is of value, let us know! A sample copy would be most appreciated.

CAN WE HELP?

One last avenue of support is *Socrates Z-Node 32*. We will copy any files you want from our system or extensive off-line archives for $6 per disk ($10 for foreign orders). Send $2 for a listing of available files. Please make checks out to Chris McEwen, Sysop, and tell us what format you need. Proceeds go to the support of Z-Node 32.

Chris McEwen


```
Try one of these Remote Access Systems for support via modem:
Z-Node Central, Los Angeles CA 213-670-9465      Z-Node 36, Pasadena          CA 818-799-1632
Z-Node  3, Newton Centre    MA 617-965-7259      Z-Node 45, Houston           TX 713-937-8886
Z-Node  4, Salem            OR 503-370-7655      Z-Node 50, Alice Springs, N.T.
Z-Node  5, Montreal QC CANADA 514-324-9031                 AUSTRALIA 5750     61-089-528-852
Z-Node  6, Drexel Hill      PA 215-623-4040      Z-Node 58, Oklahoma City     OK 405-943-8638
Z-Node  9, San Diego        CA 619-270-3148      Z-Node 62, Perth,
Z-Node 10, Mill Creek       WA 206-481-1371                 Western AUSTRALIA 61-9-450-0200
Z-Node 11, Chicago          IL 312-764-5162      Z-Node 65, Cheyenne          WY 307-638-1917
Z-Node 12, Newington        CT 203-665-1100      Z-Node 66, Costa Mesa        CA 714-546-5407
Z-Node 15, Manhattan        NY 212-489-7370      Z-Node 73, Ballwin           MO 314-821-1078
Z-Node 20, Burnaby, BC CANADA 604-299-0935       Z-Node 77, Austin            TX 512-444-8691
Z-Node 21, S Plainfield     NJ 201-757-1491      Z-Node 78, Olympia           WA 206-943-4842
Z-Node 32, S Plainfield     NJ 201-754-9067      Z-Node 81, Lancaster         CA 805/949-6404
Z-Node 33, Enid             OK 405-237-9282
```

plug my company, SOUND POTENTIALS, which distributes CP/M public-domain software. I have included our latest catalog, and also the disk version which is sent to everyone who places an order. I started SOUND POTENTIALS about four and a half years ago because I felt that many CP/M users might be in the same boat as myself: not knowing enough about modems and Bulletin Boards and/or not within local calling distance of any RCP/M Boards, and having no user group around. It seemed to me I had spent a lot on CP/M public-domain disks, and I wanted to put together a "pick and choose" type of catalog. Hence SOUND POTENTIALS!

Next topic is Eugene Austin's comments about 96-tpi drives and diskettes. He recommends using only 96-tpi diskettes. I can tell you my own experience. I have been using Dysan #802067 DSDD 96-tpi diskettes in my Toshiba 96-tpi drives on the Kaypro (with Advent TurboROM), and they seem to work flawlessly. However, I also discovered that generic DSDD 48-tpi diskettes, the 21-cent kind, also work with few problems. I have seldom had one of these cheap diskettes fail in the 96-tpi drives. The entire SOUND POTENTIALS library is copied from a set of these cheap diskettes, and I have *never* had a failure with them. I have tried the cheap diskettes even as system boot disks, and they do wear out much sooner from constant warm booting off the system tracks than do the Dysan diskettes. Overall, though, they seem to work fine. I have tried some generic HD diskettes (the type used in AT 1.2 Meg drives), and they seem to work OK, too. But I am not convinced they are worth the extra cost. I have not tried to locate the Dysan #802067 lately, and plan to try using a premium 48-tpi diskette, such as Verbatim or Dysan, for my highest reliability needs. By the way, I hardly ever clean my disk drive heads, perhaps once a year.

It occurs to me that one reason diskettes may seem to work better in some computers than others is that the BIOS on some computers does not do as many *retries* when it is unable to read a disk sector. I once installed an old 48-tpi drive from my Kaypro in a Tandy 1000 MS-DOS computer. It worked, but not reliably. Upon

reinstalling it in the Kaypro it worked as reliably as before. I really do not know how to explain this except as a software difference.

Next, I have a question about MagicIndex. What is the technical difference between the versions that work with ASCII word processors and WordStar? I like to use ASCII word processors, such as ZDE and T/Maker, although I use WordStar 3.3 sometimes. I also use FILT7A by Irv Hoff. It's a great filter utility! Does the WordStar version of MagicIndex simply accomodate the high bit of WordStar, or does it have compatible dot commands or something else? I always think ahead when I buy software, and I don't like to feel I am limiting my future uses by buying a limited version. If I bought the ASCII version of MagicIndex (for a laser printer), could I just filter WordStar files if I had to?

I mentioned T/Maker just now. Do you know T/Maker? This is a really unique product for CP/M. It used to be very expensive. I bought it at a fantastic sale price – around $60.00! – directly from T/Maker a while back. I see Elliam Associates ad lists it now for $120. This is still a good buy! Although it takes a while to learn, the more I learn the more I like! T/Maker combines a spreadsheet, word processor, and data-base manager into a package. The concept is to use plain ASCII files for all data. The same working file can be edited with the word processor, calculated as a spreadsheet, and used as a data base! You can use any of your (non-T/Maker) ASCII text utilites to view, print or process the data, too. T/Maker's word processor is a little unusual, and I do not use it for regular work. But it has some features that blow my mind. The word processor (the entire T/Maker concept, really) uses a matrix, X-Y, approach to the ASCII files. It is possible to *overlay* one ASCII file on top of another – *at any X-Y offset!!* This beats the pants off of WordStar's column mover. The data base works by using simple ASCII definitions for record format and data entry screen formats. If you like, I could write a brief review of T/Maker for *The Z-Letter*. I have not used the spreadsheet very much, but I could give a general overview of T/Maker. I do not recall ever seeing a detailed review of T/Maker anywhere, though I suppose there

have been many I missed. I have found one small bug in the T/Maker editor, and haven't got around yet to calling up T/Maker to see if there is an update available that fixes the bug. I will have to do it soon!

I am interested in Kaypro upgrade hardware. I use a Kaypro 4-84 modified with the Advent TurboROM, and an Advent 1Mb RAM disk. The machine has two 96-tpi and one 48-tpi drives internally mounted. I would like to find out about hard disk options, but none of the old suppliers seem to be in business anymore. Maybe a reader knows where one could get an Advent hard-disk interface, or an Advanced Concepts Mini-Winnie hard disk.

I would like to see an *Computer Classics* article on the Kaypro in *The Z-Letter*. I might even try to write one myself. I have *Profiles Magazine* from May 1984 to November 1988 (the final issue), that would serve as a good reference. I also have *Micro Cornucopia* #13 through #36 (August '83 thru July '87).

Well, that's long enough for this letter! I'm looking forward to *TZL #11*!

<div align="center">

Very truly yours,
Richard E. Brewster

</div>

Richard, thanks for writing. I have an item on my list of letters to write to invite you to send an ad for SOUND POTENTIALS, as I was aware that you are still in the business of selling CP/M public-domain software. Thanks for beating me to it! I will pass on a copy of your catalog-on-disk to the CP/M software librarian of the Eagle Computer Users Group, also.

The main differences between the Spellbinder-LaserJet version of MagicIndex and the WordStar-LaserJet version is (1) the interface for inline commands, and (2) how they react to characters outside the ASCII range. The Spellbinder version expects inline commands to be preceded by a [; for example, the inline command to begin superscript is [S. Control characters imbedded in text characters with the high bit set are treated as unprintable characters; MagicIndex warns you for each one it encounters, and asks you if you wish it to continue formatting the page. The WordStar version, on the

other hand, expects inline commands to be preceded by an embedded control-A, and ignores the fact that WordStar sets the high bit of the last character of every word. Both versions use the same dot commands, which begin with two periods, and treat all lines beginning with a single period as a comment.

You can certainly use FILT to fix up WordStar's mess before working on a file with an ASCII word processor like T/Maker, and then run it through the ASCII version of MagicIndex. That's exactly what I do with Spellbinder.

You are not the only one who raves about T/Maker, by the way. I've never used it myself, but those who have seem either to love it or hate it. Please keep me informed on it. A review would be most welcome.

I would also accept gratefully a column on the Kaypros. There were so many models, improved so many times over the years, and so much third-party hardware and software enhancements, that the task would be hopeless for anyone but a long-time, dedicated Kaypro owner. Perhaps all the members of an old but still active Kaypro users' group could pool their resources?

<div align="right">

30 March, 1991

</div>

Dear Dave:

You asked about the present availability of Magic Wand. It no longer is! Originally written by Small Business Applications, it was somehow acquired by PeachTree Software. PeachTree produced an update that corrected most of the bugs in the printing portion of the original package, and I've been using that for years. PeachTree then cross-assembled it for the original PC when it developed its "PeachText 5000" package, combining it with a data-base package and a version of SuperCalc for one of the first integrated packages for the PC.

I also called Joe Wright the day after I last wrote to you. I've made arrangements with him for my own distribution of Anapro's Z-System package. I'm glad I did; at the time I called, I wasn't aware that Joe held some rights to the thing! Those have now been cleared up, and I've ordered a few copies of *ZCPR3: The Manual* from the publisher for inclusion with Anapro's

The Computer Journal
Applications — Programming — User Support

Bring a Friend Along!

Friends help friends, right? Now you can help a friend and yourself at the same time! Introduce someone to *TCJ*. When your friend subscribes at our special introductory rate and identifies you as the sponsor, we will add an issue to your subscription. Free! Best of all, you can sponsor as many friends as you want. Keep sponsoring folks, and you may never have to renew your own subscription!

Your subscription means a lot to you. Embedded controllers; programming in Forth, Modula-2 and C; building interface circuits; using Z-System; modifying operating systems—where else can you find such depth and diversity of advanced information on micro computers? Why not share? Sponsor a friend today!

Here's my friend. Sign him (or her) up at your special introductory rates!

Name: _____

Address: _____
_____

City: _____

State/Province: _____ Postal/Zip Code: _____

Country: _____

Subscription Term (check one)		Single Issue	Regular Rate	Pay Only	Save Up To
☐	1 Year US	23.70	18.00	16.00	32%
☐	2 Year US	47.40	32.00	28.00	41%
☐	1 Year Foreign[1]	29.70	24.00	21.00	29%
☐	2 Year Foreign[1]	59.40	46.00	40.00	33%

[1]*Surface shipment. Please inquire for air shipment.*

Payment: ☐ Personal Check ☐ Money Order ☐ Visa ☐ Master Card

Visa/MC Account Number: _ _ _ _   _ _ _ _   _ _ _ _   _ _ _ _

Expiration Date: _ _ / _ _   Issuing Bank: _____

And give me some credit! Add a free issue to my own subscription. I am:

Name: _____

Address: _____
_____

City: _____

State/Province: _____ Postal/Zip Code: _____

Country: _____

Mail to: ***The Computer Journal***
P.O. Box 12
S. Plainfield, NJ 07080-0012

software; otherwise, my documentation would have been sparse! The book is out of print, but apparently the publisher still has some stock.

I'm looking forward to your next issue. I'm running behind myself, so expect to double up, again, as I did for my last issue. Too many irons in the fire!

Sincerely,
Kirk L. Thompson
Editor, *The Staunch 8/89'er*
P.O. Box 548
West Branch IA 52358

PERSONAL ADS

Eagle PC manuals and software for sale
MS-DOS manual, GWBASIC manual, and CP/M-86 manual that came with an Eagle PC. Software included. $10 or best offer. Call Burt Sukhov at (408) 269-8420 before 9:30 A.M. or after 3 P.M. Pacific time.

Osborne Executive for sale
Like new, with two floppy-disk drives, 128K RAM, 80-column screen, Epson RX80 printer, CP/M 3.0 operating system, WordStar, Supercalc, Personal Pearl, MBASIC, CBASIC, P-System, and back issues of the *Osborne Companion* and *Foghorn*. $250 takes it all. Call John Coppini at (415) 352-4533 after 7 P.M.

Eagle PC-2 for sale
Working Eagle PC-2 with MS-DOS, PFS:Write, Typing Tutor, and Tandy DMP106 printer.

$275. Call Terry Saxe, (408) 947-1975.

H89 for sale
Working H89 with Magnolia disk controller running three half-height soft-sector floppy-disk drives in an external box. The original full-height hard-sector floppy-disk drive is still in the case. Full documentation, software. $50 or best offer. Call Floyd Knapp, (408) 996-1444.

Communications program wanted
Looking for any telecommunications program that runs under the CP/M-86 operating system. Please call Jimmy Childers in Charlotte NC at (704) 399-8404 extension 17 during business hours East Coast time if you have one. *[Note: this is 16-bit CP/M and will not run CP/M or MS-DOS programs! — DAJM]*

MAGAZINE ARTICLES

This sounds familiar . . .

Kenneth Lee Petersen has an article, *The Laser PC3 — A little known bargain in notebook computers*, in the March 1991 issue of *COGWheels* (*CogWheels* is the newsletter of the Cincinnati Osborne Group and the Cincinnati Kaypro Users' Group). I'm not sure why Kenneth calls it a PC3, when the literature I had from Laser called it a PC4; perhaps the PC3 is the version with the cables and modem program to connect to a PC, and the PC4 is the version that talks to a Macintosh. Anyway, Kenneth has one and he loves it. He uses it to talk to his Sanyo MBC 1150.

Al Chandler's *CP/M Program Notes* in the same issue is a good, short overview of CP/M for the beginner.

EAGLE COMPUTER USERS GROUP

The Eagle Computer Users Group is one of the few remaining support groups for users of Eagle computers, both the CP/M line and the later 1600 and PC models. Because Spellbinder was bundled with Eagle computers, ECUG is also a Spellbinder users group. Anyone who acquires an Eagle computer is urged to get in touch with ECUG, P.O. Box 3381, Saratoga CA 95070, phone (408) 972-1965.

Meeting place

ECUG meetings are held at Tandem Computers Incorporated, 10435 North Tantau Avenue, Cupertino. To get there, take 280 to the Wolfe Road exit; turn left at Vallco Parkway; turn left at Tantau; go over the bridge; and turn in where it says "Tandem Computers" on the left. There is no longer a guard at the lobby; ECUG members will check the front door at intervals to admit attendees. Be sure to sign in at the meeting.

Meetings are the second Saturday of every month, from 9 A.M. to Noon. The remaining 1991 meetings will occur on May 11, June 8, July 13, Aug. 10, Sep. 14, Oct. 12, Nov. 9, and Dec. 14.

April 13 meeting

The start of our April meeting was delayed by the mysterious lack of a guard to open the doors. Being a Tandem employee, I used my card key to enter and let everyone else in. I also got a sign-in sheet for our meeting, which was signed by Bill Bradley, Dick Dethlefsen, Shirley Welch, David Banoff, Bob Kowerski, Ken Thomson, Bob Vinisky, Jack Morse, Bill Josephson, Rudy Stefenel, and Jerry Davis. Dave Honkala was also present.

A phone call to the guard number uncovered the fact that Tandem has cut expenses by eliminating the guard on weekends at the building we've been using for our meetings for several years now, without notifying us. The issue of whether we can continue to meet there, or whether we can meet at another Tandem building instead, has not yet been resolved. Our May meeting will occur at the same place,

with us checking the door periodically for new arrivals. For later meetings, watch this space.

No program had been scheduled, but lively discussions occurred, disks were copied, and people with questions had them answered. Dave Honkala had purchased two H-P computers/terminals, as well as a Televideo terminal, at the Foothill flea market. I identified the Televideo as a 950, as we gave it a rudimentary testing by attaching it to my SB180FX in place of my regular terminal. Satisfied, Rudy Stefenel traded Dave a Kaypro II for the terminal. Ken Thomson also delivered to Rudy the Pied Piper computer he'd sold him, and showed us a printout of a file he'd found on one of his People's World computer disks. It turns out that the brand name of the computer is not People's World; *People's World* was a publication done using what is a Zeda computer. I still haven't heard of it, and neither has 22DISK or UniForm.

May 11 meeting

9:00 Meeting begins.

9:30 Bob Vinisky will demonstrate Z-System history shells that allow one to recall past commands, edit them, and reissue them, such as HSH, LSH, CLED, EASE, etc.

12:00 ECUG meetings ends.

ECUG library

The contents of the ECUG Library reside at the editor's house. Members may borrow them between one meeting and the next. Either call me evenings at (408) 293-5176 and ask me to bring them to a meeting, or phone to arrange a time to come over and borrow them.

README.DOC, Journal of the Orange Coast IBM PC User Group. March 1991 issue, Version 73 *(cute, guys)*. Donated by David Banoff.

ECUG software libraries

ECUG has two software librarians. Anyone

seeking CP/M or Z-System software should contact Ken Thomson, 71 Rosenkranz Street, San Francisco CA 94110, phone (415) 648-7550. For PC (MS-DOS) software, our librarian is Jack Morse, 7390 Rainbow Drive, #1, Cupertino CA 95014, phone (408) 252-6103.

Please note that, as ECUG is no longer a corporation, the officers of the club do not wish to handle money (except those, like Shirley Welch and myself, who have businesses and do so as part of the business). Therefore, when you request disks from Ken or Jack, send them the floppy disks and the postage to mail them. They will copy the software you request onto your disks and mail them back to you. That way no money changes hands, as would be the case if they continued to charge a fee per disk.

PC software received (donated by the author or company):

Hard Drive Helper is said to contain (1) information on over 800 hard drives *[sic!]* by manufacturer, (2) a chart showing AT type numbers for different drives and BIOSes, (3) a

floppy drive *[double sic!]* identification section, and (4) instructions for connecting drive cables right the first time. Evaluation copy sent by DaneTech, Box 2311, Evergreen CO 80439.

(Parenthetically, does this new PC fashion of referring to drives as "hard" and "floppy" bother anyone else, or is it just me? How can a drive be floppy? In this magazine, the correct usages *floppy disk*, *floppy-disk drive*, and *hard disk* will continue to be used.)

POP-LABEL 1.1, RIGHT-TRIM 5.1, GIST-PLUS 2.4 are updates to software previously received from TypeRight Corp., Palm Beach, Florida, phone (407) 969-3643.

Professional Master Key 3.2 is likewise an update. Public Brand Software has bought the rights from Reggie Gage, RPG Software, according to a letter accompanying the new version. Public Brand will honor all agreements that RPG Software had with disk distributors. Contact Bob Ostrander at Public Brand Software, 3750 Kentucky Avenue, Indianapolis IN 46241, or phone (317) 856-6052.

Z-SYSTEM USERS GROUP

There has been absolutely no response to my attempts to start a Z-System Users Group in this area. No one has shown up Saturday afternoons at Tandem, or even inquired there. Nor has anyone contacted me to suggest an alternate time and place. Now Tandem has ended the weekend guard shifts at Building

200, which may be the end of that site's suitability for meetings.

I do not give up so easily, but this double whammy of no response and no place to meet has me stopped for the moment. I will report any future developments.