

Saving Our HEATH Eight-Bit Machines!

SETHO JOURNAL

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SEASON'S Best WISHES To All,
and May The Diet of Your Choice
Bring You Health and Prosperity!

SEBHC JOURNAL

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FOUND - Cure for "Credit Card Blues"

There's relief for that blue feeling you get when a vendor accepts your charge card payment but doesn't supply the goods or services he promised. Just request a "chargeback" from the bank which issued your credit card. If the bank finds you were incorrectly billed or that you should receive a refund they can often take the charge off your account and "charge it back" to the merchant. Here's how you do it:

1 - Put your chargeback request in writing. Include your name as it appears on the card, account number, amount in dispute, and a description of the problem, including names of those you talked with in trying to resolve the dispute with the merchant.

2 - Specify that you are requesting a chargeback under the provisions of the Fair Credit Billing Act, sign the letter, and do not forget to keep a copy for your records. If there's a large dollar amount involved, send the letter by registered mail so that you have proof of receipt.

3 - Send the letter to the department listed on your bill for enquiries and disputes. This may be different than the address to which you send your monthly payments.

4 - Don't wait to initiate a chargeback. When you request a chargeback for defective goods, the card issuer is only required to reimburse you for the amount remaining when you request the chargeback, although some will credit you the full disputed amount. The Fair Credit Billing Act stipulates that most types of chargeback requests must be received by the card issuer within 60 days of the date on the bill when the charge first appears. You're most likely to get a chargeback if you question the charge BEFORE you've paid for it.

5 - The law permits you to withhold the

amount in dispute while an investigation is conducted. No matter how angry you may be, do NOT withhold any more than that amount. Creditors can't report you delinquent on the disputed amount, but they can and will report you late if you don't pay the rest of your bill. If you've already paid a portion of the bill you're questioning, don't subtract that amount from the next month's bill. If you are going to make a minimum payment, you can subtract the disputed amount from your outstanding balance to calculate the payment.

6 - If you pay for something which won't be delivered until later--such as airline tickets or a special mail-order item--you can dispute the charge up to 30 days after the date you would have received the goods or services, instead of losing chargeback privileges 60 days after being billed. Although not part of the Fair Credit Billing Act, VISA and MasterCard promote this "delayed delivery provision" for consumer protection.

7 - ALWAYS keep written copies of your correspondence, and follow up phone calls with a letter noting with whom you spoke and any agreements made.

For more information, write for these free pamphlets:

☐ "Solving Your Credit Card Billing Problems" --

Bankcard Consumer News
333 Pennsylvania Avenue, SE
Washington, DC 20003

☐ "How To Write a Wrong" --

AARP Fulfillment
P.O. Box 2400
Long Beach, CA 90801

☐ And be sure to tell 'em you read about it in the SEBHC JOURNAL!

The SEBHC JOURNAL helps YOU!

LETTERS from Our Readers

Dear Len,

I recently picked up a 360k DSDD drive which had been used on an ibm-pc. Do you or any of our members know how to interface this drive to a hard-sectored controller?

Having a double-sided drive would double the [data-storage] capacity of my floppies. I'm currently using Magnolia CP/M Ver 2.242 with my H89, and it allows double-sided hard-sector format.

MARK A BUCKINGHAM, Teaneck, NJ 07666-0768

[No problem if you have the original H/Z hard-sector controller card installed in the I/O slot closest to the internal drive, and it has a ribbon-cable running to a back-apron connector for external drives. Be sure to set the drive's select plug(s) (or dipswitches--which I prefer) for whatever position it is to be used in. Also remember: Heath's hard-sector card thinks D3 at the drive's select plug socket means A:/SY0:! If you're going to daisy-chain the new drive with your old one-sided units make absolutely sure that only ONE drive has the integrated-circuit-type 150-ohm resistor pack installed (or jumpered), else you may cook the '89 hard-sector controller card! Hope you enjoy your CP/M GAME DISC #0! -- ed]

Dear Len,

[It's 3-Dec., and I] just got my August issue of the SEBHC JOURNAL two days ago! [U.S. Snail] misssent it to APO 09283, wherever that is. Hence I could not reply to your comments on my letter to Claude T. Abbot of Skill Data.

I've enclosed a copy of Claude's reply to me. He's an OK guy in my books!

BAYARD BADENHAUSEN Phd, Rye, NY 10580

"Dear Bayard,

"Thanks for the fine words about WS&DBkey. I am sorry that I cannot help you with the versions you have of the operating systems. Skill Data just has not had the time to take that on, and 8-bit is not worth advertising, but I still do get and place orders for H89s & H8s. Thanks again. /s/C T ABBOT"

[Dr. Badenhausen, I've complained to the U.S. Snail officials about your particular mixup and they said "this sometimes happens; we don't really know how to prevent it". At least you ACTUALLY RECEIVED your JOURNAL; some other subscribers along the East Coast have received (in a plastic baggie together with an apologetic note enclosed) just a scrap of their JOURNAL's back page where the mailing label lives! And thanks for the extra effort in helping keep us 8-bit users aware of what's happening. Could you try getting Mr. Abbot to send us an advertisement for his 8-bit software--at no cost? -- ed]

Dear Lenny,

* E R R A T A ! *
=====

A fellow subscriber in New Jersey called me about the REMIND program which appeared in the September JOURNAL. Each time he tried to assemble it, he'd get a "V" error from the line which follows this one in the listing:

```
* Now get the three bytes of month's name
LXI     B,040302A
```

... ..

The digit 3 should be a 4, thusly: B,040402A. Now it will assemble properly. Curse those gremlins!

BERNARD HELMS, Berrien Springs, MI 49103

[Thanks for informing us of this sneaky little bug! I had not had a chance to assemble and run your program because of other duties so the error just slid past me... Mario had called me from NJ after having spent a whole day re-typing and reassembling the listing (each time getting the V error, plus random other errors). I hope you both can forgive my goof! -- ed]

Dear Lenny,

Just finished reading the October SEBHC JOURNAL, and as usual--in my opinion--it was quality. CP/M is still new to me so I enjoyed the CP/M articles.

Since my last letter I have finally found time to explore the programs more on the HDOS Programmer's CARE Package Disc #0, specifically SYSERR.ABS and SYSCHECK.ABS. I noticed a problem with these two programs. My system is set up with two 96tpi drives in a 237 as SY0: and SY1:. I also have an H17 hard-sector drive which is set up as DK0:

When I ran SYSERR it printed out "Detailed Disk Statistics" and showed all zeros for READS, WRITES, and Error Counts, plus "LAST HARD ERROR WAS ON SECTOR #721". Then I ran SYSCHECK and got a graphics display of everything SYSERR had shown, plus TT settings--which were correct. But drive step time showed as 30mSec. I tried changing SY0: step time to 6mSec but got only zilch! Then I mounted DK0: and did a CAT. Then I ran SYSERR and the "LAST HARD ERROR" message was gone. And SYSCHECK now displayed correct drive stepping speeds.

Could it be that these programs were written for only hard-sectored systems, and they don't recognise the soft-sector controller and drives?

This isn't A Really BIG Problem, since I have a CP/M program which checks both hard and soft sector drives. But it would be nice to have a HDOS version which does the same.

THANKS FOR CONTINUING TO DO A GREAT JOB WITH THE JOURNAL.

ALLIE C LINGO, Dierks, AR 71833-0118

[Humm! Occasionally I've gotten the same "LAST HARD ERROR" message on my H8/89's soft-sector side and still haven't found what causes it! I copied the .ASM listing from an old REMark (OSTATS.ASM which shows disc statistics as HDOS 1.6 once did) and assembled it when I was still running only hard-sector. "One-Of-These-Days-Beal-Soon-Now" I'll go through the code and make sure it works on any kind of boot disc. SYSCHECK.ABS was

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LETTERS, Continued

sent me in assembled form by Maurice Desmeules of the Montreal (Quebec, Canada) HUG on a hard-sector disc full of software. If Maurice sees this note, I hope he still has the original .ASM version around and perhaps will mail a copy so I can try to find out why it doesn't like soft-sector drives. Incidentally, I've noticed also that SYSCHCK, if run from soft-sector drives can't round off "Motor" half seconds. Many thanks for alerting us to these problems. Perhaps some HDOS programmer with experience in Heath's DEBUG or HUG's RDT can help? -- ed]

Dear Sir:

=> This is the sad story of my latest dealings with TMSI <=

In the Jan-87 SEBHC JOURNAL there was an article by your A. Stapher [reviewing] the SuperSet Upgrade Kit for the H19 terminal. Price was \$49.95, availability 10 days from stock. I called and talked with Mr. Hart; he said he was sure that it would still work, even though I had made some changes to my terminal. So I ordered the kit on 17-Jan-87, using my credit card to pay for it. While placing my order I was told by TMSI that their printer had lost the manual's originals and that a new one was being made up with corrections and updates, and they should be shipping in about a month.

On 26-Mar-87 the order was billed to my credit card. I thought, "Oh, boy! It should be here any day now". I didn't think they'd bill me unless they had actually shipped it.

I finally called again on 22-Jun-87 and was given the same story about the manual. I mentioned that I had been billed for it nearly three months before. I recieved a real fast rerun of the lost-manual-originals story and was told TMSI expected to start shipping the first week of July, 1987.

On 9-Sep-87 I again called and got yet another repeat of the same old story about the manual. I explained to TMSI that a seven month wait was a little too much for me; would they please cancel the order and refund my money. They told me that a credit would be issued to my credit card account.

By 30-Oct-87 I had recieved two credit-card statements, but still no credit from TMSI. Once more I called but got a recorded message to call a different number (616-342-4967). I called that, and the gentleman answering told me Mr. Hart was out for a couple days, and had me leave my number so Mr. Hart might return my call...maybe.

Originally I had intended to send a copy of this letter directly to Mr. Hart and give him a chance to respond. But now I feel that is out of the question.

My past bad experience has made me change my way of buying H8 and H89 products from other vendors. Many may not get an order from me, and those orders I do place will, from now on, be on a strictly C.O.D. basis. It may give vendors an impression that I don't trust them. That's too bad, but that's the way it has to be.

It is usually good reviews such as Mr. Stapher wrote which induce me to buy products, rather than from advertisements of them. I can imagine how he feels now that my story is out...

L T RIDLON, Auburn, ME 04210

[On 28-Nov-87 I received your letter and immediately tried to call Mr. Hart at his new location in Kalamazoo and ask that he either call you directly, or give me his side of the story to print together your complaint--but no one answered. I had talked with Lee once or twice before you wrote me, so I know his phone works. I have since tried MANY times to contact Mr. Hart in your behalf with similar negative results. Because of that, all I can do is print your letter and hope that Mr. Hart reads it here and takes time to write directly to both yourself and the JOURNAL. Lee Hart is basically an honest guy, a very good programmer and crackerjack digital engineer. I'm fairly sure he'll do the right thing for you. But in any case, good luck! -- ed]

Dear Leonard:

I enjoyed meeting you at CHUGCON '87. I have held off writing you until I'd read through all the [JOURNAL, Vol I] back issues. (I read them in the wrong order. When I reached Vol II, #3 and the dBaseII ad, it was too late. That is about the only occasion I can recall where I immediately went to the telephone upon reading something!) I find the JOURNAL informal but informative. I like it enough that I'm enclosing my subscription and hope it starts with II:4--I don't want to miss any issues!

Reading the back issues, I jotted down a few ideas on how it might be improved somewhat. I came aboard too late to see your questionnaire, but appearance doesn't bother me much, as long as it's legible. What actually bothered me--maybe you feel that I'm too picky--was the editing. I think hyphens should come between syllables. Having them elsewhere is about the same as potholes in a highway. [Ab-so-lute-ly correct! -- ed] And apostrophies; "It's" is the contraction of "it is". "Its" is the possessive, not "it's" (the latter is not in the English language). [Fowler's "Modern English Usage", 2nd edition disagrees but what does Fowler know--he's ONLY a Britisher! -- ed]

I thought "megaflops" meant millions of floating-point operations a second", which is a very different thing than CPU clock-cycle frequency. To figure the number of operations (not floating point) a second my 4-MHz H89 achieves, I need a weighted average of the T cycles for each different Z80 instruction, according to frequency of an instruction's usage. Heath's '89 operating manual says "T" cycles (para. 7.0) range from four to 23, so my H89 achieves between 0.174 and 1.0 mops. [OK, if you say so, but henceforth we shall use Mc/s to indicate Alternating Current Frequency, and pulses/sec for CPU Clock Pulse Repetition Rate. Now anyone with more than two brain cells to click together should actually understand what is being described! -- ed]

It also seems a spelling checker would be helpful but I have mixed feelings about them. The trouble with spelling checkers is that they don't recognise when a word has been misspelled, so the checker substitutes another (real) word. You can see this in recent novels where a correctly-spelled wrong word is used. I'd rather see typos than wrong words!

LETTERS, Continued

But enough of this nit picking! Let me briefly describe my experiences and equipment. I've been a programmer since 1962 and still am, for I thoroughly enjoy all phases [of programming] from analysis to maintenance. Most of my work has been in support software, other programmer's tools. (My interest in dBaseII--mentioned earlier--comes from other applications I have in mind which I'll implement Some Day Real Soon Now.

When the first microcomputer kit came out (the Altair circa 1972-3?) I wanted one. Later, I almost bought the cheapest serious Ohio Scientific micro (at about \$8000). I had enough in my savings, but as I started writing the check I broke out in a cold sweat--a message from somewhere "beyond", no doubt!

Eventually, in late 1979 I decided to get an H89. What I now have isn't exactly an H89, for Heathkit didn't have any in stock. Instead, I got an H19 with H88 upgrade kit, a serial I/O card, 64k memory expansion kit, and two 96tpi outboard drives. I got two drives because I thought I'd be using USCD Pascal, which was said to require them. Now I'm glad I have them, even though I don't have USCD Pascal, and had trouble with 40/80-track disc incompatibility for a while.

Like you I'm using an Epson MX-80 with the Dots-Perfect upgrade. Also, I have a Heathkit SC-203 printer buffer, and a Radio Shack FP-215 flat-bed x-y plotter, and have installed Anapro's 4mHz [4mp/s? -- ed] clock speedup and automatic key-repeat modification kits. There are stories about some of these items which I want to get into later about things I've learned and questions I hope other SEBHC members can answer.

I've not aquired much software for several reasons: First, because I am a programmer and I'm picky about how my programs work--I expect to not be satisfied with applications. Second, although I aquired a modem about two years ago, I've been reluctant to start using it for fear of the resulting telephone bills--almost any interesting BBS requires a long-distance call. But I'm about to start using the modem anyway.

I started out with my H89 with CP/M, Magic Wand, and Microsoft's BASIC interpreter and compiler. Having this powerful program development interpreter-compiler pair allows me to do things I would otherwise not have attempted. Along the way, I have aquired Turbo Pascal, later the Turbo Database Toolbox, Hoyle & Hoyle's QUERY!2, MAPLE, MYCHESS, and some training programs for my kids. I've also developed a few special-purpose programs which you'll hear about in due course.....

All my commercial software was purchased with some particular application in mind but, because I started work on a master's degree in computer science, many were "works pending" until recently. During the four years my studies took, I made heavy use of Magic Wand in writing an artificial-intelligence program for one course. It was especially fun to do, although the program was virtually useless in the end....

My reason for buying QUERY!2 was my "magnum opus", a classical-music database. Although QUERY!2 is a good straight file manager--especially for its' price--I found it inadequate. I have about 1,000 phonograph records, some audio cassettes and open-reel tapes and, now compact discs to catalogue. (See how my spare cash evaporates?) When the JOURNAL dBaseII ad ap-

peared, I was ready to buy; it seems to be the only software meeting my requirements. Can you imagine my disappointment at missing that bargain?

I was as impressed by the Dots-Perfect upgrade kit for my Epson MX-80 as your reviewer in the JOURNAL was. But after installing mine I found that it wouldn't work properly with Epson's 8141 serial interface board, so I bought Heath's buffer kit and changed the MX-80 to parallel I/O. The Dots-Perfect upgrade lets you set the printer in double-strike mode--just enter, then exit subscript mode. It stays double-strike thereafter until powerdown. [You're right! -- ed]

I hope John Broome (LETTERS, I:9) will tell us more about his problems and solutions in connexion with the Turbo Pascal editor. I too have experienced some odd things with it. One happened after installing Anapro's 4mp/s clock upgrade in my '89 and I tried running the terminal at 19.4k-baud. Magic Wand works just fine, but Pascal goes into an endless bell-ringing loop! I don't think increasing the TLB clock speed will help, so any information John Broome--or anybody--can offer shall be most welcome! Incidentally, while using the DEC Rainbow to develop some Pascal interactive software, I was struck by its' similarity with the Z100. I wonder if some Heath designers have worked for DEC? [Yes. The H11 and H8 reflect DEC's PDP-series heritage. -- ed]

A few observations and comments concerned with the JOURNAL back-issues: The ads and discussions of hardware mods and add-ons are particularly interesting. In Vol I:7, p11: CTRL-SHIFT-ERASE to clear the screen?! I just hit SHIFT-ERASE; is your H89 different from mine? [Yes. TMSI's SuperSet terminal upgrade kit that gymnastic exercise--thus the CLS.COM utility. -- ed] In I:10, p13: George Ewing says the BIOS is a separate file since it won't fit the bootstrap tracks. Is it for that reason only, or is it a relocatable file which lets us hobbists more easily modify it? [Both I think. -- ed]

Before ending this, I'd like to see a debate started about "what-you-see-is-what-you-get" (WYSIWYG) word processors versus "the other kind" (such as perhaps, Magic Wand?). I feel most people seem to prefer WYSIWYG, but my own preference is Magic Wand because it does (almost) everything I need. "The other kind" makes you resort to wierd manipulations to do the most simple job, such as test system variables or conditionally force a new page--child's play for Magic Wand. Neither my wife (who's done political newsletters and mailings with it) or I have yet reached Magic Wand's limits! But it does have a few limitations which I'll bring up in another letter...

Your offer to extend one's subscription has me thinking of submitting an article to the JOURNAL on disc. Shall I send a text printed to disc file or Magic Wand-type files? What left or right margins do you prefer? I've tons of good 8-bit articles "just itching" to be printed...

Attention SEBHC JOURNAL vendor advertisers: Know that any future purchases I make from them was because I first saw it advertised or described there!

STEPHEN C VANDIVERRE, Lexington Park, MD 20653

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PORTABLE CP/M COMPILER -- Part 4

Confessions of a Game Hacker
by
Tim Brengle

Well, I certainly was abstract last month! Let's look at parsers from another game-related perspective. (My wife read last month's article and suggested the followint approach.)

Early adventure-like games could only recognize simple two word commands. In fact, the original ADVENT can only look at the first five characters of any word a player types! Later games (such as ZORK and friends) can handle longer, much more elaborate commands. How is it that they recognize these commands and figure out what to do? The answer (as I am sure you have already guessed) is: They use parsers.

Parsers are sometimes called "recognizers" in computer science literature. Why? Because that's what they do. A parser takes some string of characters and groups the characters together into appropriate pieces (in this case, words). It then uses some given set of rules of syntax (in this case, a subset of English grammar) to report whether or not that sequence of pieces constitutes a "valid" or recognized sentence.

Precisely what do we have to do to create a parser which an adventure game could use? First, we need to analyze potential sentences which we expect (or will allow) a player to type.

The basic scenario for an adventure game is that the program acts as a sort of intelligent robot. It obeys commands or reports (or both) on the current surroundings. So in order to interact with the player, this kind of program needs to recognize only commands and questions which are typed to it.

By assuming all verbs which will be used are transitive (that is no sentences will have subject and objects reversed), it turns out that commands in English really have a very few commonly-used forms. For example:

Bat.

Look under the bed.

Get the ball.

Get the ball and the bat.

Get the ball and the bat and the glove.

Put the knife into the box.

Put the knife and the lamp into the box.

Give the policeman the wallet.

Give the policeman the wallet and the gun.

To create something which can understand all these commands we need to look for the things which all these examples (as

well as any other examples that we might write) have in common. We are looking for patterns in the sentences. Perhaps the easiest way to begin to find these patterns is to replace each word in each sentence with something which describes its purpose. Then we have:

verb.

verb preposition indirect-object.

verb direct-object.

verb direct-object conjunction direct-object.
etc.

verb direct-object preposition indirect-object.
etc.

verb indirect-object direct-object.
etc.

Since there is no reason to restrict the number of direct objects in a sentence, suppose we let "dobj-list" mean "a list of direct objects separated by conjunctions". Then the examples boil down to just five basic patterns:

verb.

verb preposition indirect-object.

verb dobj-list.

verb dobj-list preposition indirect-object.

verb indirect-object dobj-list.

Believe it or not, just about all the commands that players are likely to use match one of these five patterns. And now we are in a position to use the notation discussed last month to record everything.

Wait just a minute. Weren't there supposed to be questions in there someplace?

Yes, there were. And they are there. Sort of. If I want to find out all of the things that I am carrying, I could either ask "What am I carrying?" or give the command "Take inventory". A fair number of other questions can be similarly forced into the mold of being a command.

There are also a lot of questions which don't fit that mold. Unfortunately, they raise some difficult issues and including all (or even a small subset) of the cases in our list of patterns is unreasonable. But it is a wonderful topic for a doctoral thesis! So, I am not really chickening out on the hard stuff. I just want to be able to get this article out to you before my two year-old finishes high school.

But let's re-examine the BNF stuff we started last month.

COMPILER, Continued

BNF REVISITED:

BNF is really just a notational convenience. It's a compact way of representing the pattern types which we've been working so hard to extract from our examples. It has another nice property: given a set of syntax rules represented in BNF, it is pretty easy to make a parser which uses those rules (computer scientists might say "recognizes that language").

Each line of BNF is called a "production". They're so called because the originators of BNF declared the symbol "::=" means "produces". Things are much clearer to me if "::=" is thought of as "is made up of".

There are only four things that BNF production notation allows you to write: character strings, joining together (called "concatenation") character strings, choice between alternatives, and "delegation of authority".

Character strings are represented by simply writing them. (I sometimes use angle brackets for clarification.) Joining strings together into longer strings is shown by writing the parts, separated by spaces, in the order they are to appear. Choices are represented as productions with nothing before the "::="--in this case, I usually read the "::=" as "or". Finally, delegation of authority is represented by introducing new symbols which are themselves later defined.

Let's look at some BNF for the command patterns which we found above:

```
<command> ::= <verb>.
           ::= <verb> <preposition> <iobj>.
           ::= <verb> <dobj-list>.
           ::= <verb> <dobj-list> <preposition> <iobj>.
           ::= <verb> <iobj> <dobj-list>.
```

This should appear quite similar to the patterns shown earlier. These things haven't been defined, namely: <verb>, <preposition>, <iobj>, and <dobj-list>. We know what a <dobj-list> is though:

```
<dobj-list> ::= <dobj>
            ::= <dobj-list> <conjunction> <dobj>
```

This is one standard way of defining a list of items with separators. It says that a <dobj-list> starts with a <dobj>, and that longer lists are formed by adding a <conjunction> and another <dobj> on to the end of an existing <dobj-list>.

We also know how direct and indirect objects appear:

```
<dobj> ::= <noun-phrase>
```

```
<iobj> ::= <noun-phrase>
```

Why, you may ask, do we bother with different names for these things if they have the same definitions? (As a matter of fact, my wife DID ask!) The reason is that it will be nice to be able to later distinguish between them. If we use the same name for them, it is altogether too easy to lose track of which is which--and they serve very different purposes in commands.

So, what does a <noun-phrase> look like?

```
<noun-phrase> ::= <noun>
               ::= <adjective> <noun>
               ::= <article> <noun>
               ::= <article> <adjective> <noun>
```

Just a <noun> possibly preceded by an <article> or an <adjective> or both.

There aren't very many conjunctions:

```
<conjunction> ::= AND
               ::= ,
               ::= BUT
```

We still need definitions for <verb>, <preposition>, <article>, and <adjective>. These (and the explicit strings above like "AND", ",", and "BUT") are called "terminal symbols". We expect that whatever is feeding text to the parser is capable of recognizing and classifying these few things, and letting the parser know what they are. While "feeder" or "fork" might be appropriate, we call it the "scanner".

How does the scanner know which incoming words belong to which classes? For ADL the scenario programmer must explicitly declare what nouns, verbs, adjectives, prepositions, and articles are permitted. Here's a short excerpt from an actual ADL program:

ARTICLE

```
the, a, an;
```

PREP

```
with, to, into, in, at, under, from, off, on;
```

ADJECTIVE

```
red, blue, green;
```

NOUN

```
me, red crystal, blue crystal, green crystal;
```

VERB

```
north, south, east, west, take, drop;
```

```
{more}
```

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COMPILER Concluded, WANT ADS, NOTICES

VERB

north, south, east, west, take, drop;

What happens when the player uses a word which the scenario programmer hadn't specified? The command parser displays some message such as "I don't know that word", which invariably frustrates the player--but not nearly as much as if it had instead done the wrong thing!

PARSING PROCEDURE:

Now, the only problem is how to write program chunks which actually implement this BNF. Here is part of the pseudocode for one possible implementation of <command>:

[Aside: A boolean function returns either true or false.]

```
boolean function COMMAND
  if ( TOKEN # verb ) then
    return false ;no verb??
  SCAN ;go on and look at the next word
  select on TOKEN:
    case "."
      SCAN
      return true ;First pattern done
    case preposition
      SCAN
      if ( IOBJ ) then
        if ( TOKEN = "." ) then
          SCAN
          return true ;Second pattern done
        else
          return false ;no .??
      else
        return false ;no indirect object??
    case article or adjective or noun
      if ( NOUN-PHRASE )
        .
        .
        .
      otherwise:
        return false ;invalid sentence??
```

Perhaps you get the basic idea. And I sincerely hope that all the information here has helped to bring the abstract concepts presented last month more into the realm of the concrete.

The syntax rules presented here could be implemented straightforwardly as functions or procedures in some programming language--but there is a better way! Save yourself some work, exercise some patience, and wait for the upcoming discussion of Finite State Machines next month.

--<<8>>--

=====

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WANTED -- WANTED -- WANTED -- WANTED

CP/M software for H89 as follows:
Microsoft COBOL 80
Microsoft BASIC 80
Magic Wand Word Processor
Data Star

Contact Jared Freeman, 600 Ginger Trail, Lake Zurich, IL 60047, or phone 312-438-0513 after 6pm CST.

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TANT ANNOUNCEMENT... IMPORTANT ANNOUNCEMENT... IMPORTANT ANN

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QUARTERLY 8-BIT PUBLICATION, The STAUNCH 8/89er ANNOUNCES FOUR CHANGES FOR 1988!

Subscriptions are now \$8 for the four-issue year, effective 1 December, 1987. Overseas subscribers, please add \$2.00.

Commencing 1 January, 1988, STAUNCH will pay \$50 for each article submission of between 1,000 and 2,000 words. Unlike most other computer publications, authors will be paid upon acceptance of their article, not on its publication.

STAUNCH will accept paid commercial advertising from 8-bit-oriented vendors. Advertising will be in a two or 4-page inserted section, bringing STAUNCH's size to 12 pages, maximum. Ad rates are \$50 a full page, \$25 a half page. Please send camera-ready advertising copy--or enquiries--to the address below.

Founder Hank Lotz and Contributing Editor Kirk Thompson--who have been putting out STAUNCH for the past year--will swap roles; Kirk will assume editorship with Hank as Contributing Editor. The first quarterly issue (Jan/Feb/Mar), number 8, will be mailed first-class in February. All subscriptions remain aligned with the calendar year.

Send orders and enquiries to:

Kirk L Thompson
#6 West Branch Mob Hom Vil
West Branch, IA 52358

Please make cheques payable to "Kirk L Thompson".

=====

[And tell 'em you saw it here in the SEBHC JOURNAL! -- ed]

=====

TUTORIAL in "C" -- Part 3

C the Light
by
Darrell Pelan

This month's program uses in-line assembly code to call the BDOS function 31 to locate the Disk Parameter Block (DPB) and then decode the DPB itself. First DPB assigns a char pointer to the value returned by `dbploc()`. I used a character pointer since I wanted to look at each byte in memory. In C/80 char's are stored in bytes. Pointer arithmetic allows me to point to any individual memory location with a char pointer. An int pointer would always point to a word (2 bytes).

DPBReader displays the bytes in memory as ASCII code. In `chgtohex()`, the low nibble of `*cp` is used as an index into the array `hex[]`. The low nibble is masked by the constant `lowmask = 0x0f`. Dividing `*cp` by 16 shifts the high nibble to the low nibble position.

The DPB is decoded next. The memory pointer, `*mp`, is used to reference the beginning of the DPB. The loop is executed twice. The first time through writes the information to the disk file `RESULT.DPB`. The second time displays to the screen.

DPBReader was written before I got C/80 v 3.1. I had several problems with extending the sign bit when C changed char values to integer values. There were a couple of ways around this problem. The conversion for the Group size is forced to an unsigned integer by `(unsigned)`. Another method, used in the next two conversions, is to AND the 1 byte char values with a 2 byte constant `00FF` which makes sure that the sign bit is not extended. The latest version of C/80 has a compiler option, `-x`, that should take care of this problem since it stops sign extensions on type conversions.

Listing 1 --

```
/* Program DPBReader */
/* by Darrell Pelan */
```

```
#include <printf.h>
extern int fout ;
```

```
main()
{
    char hexval[2] ;
    char *mp ;
    static int fp;
    int j ;
    static unsigned num ;
    float pow() ;
```

```
printf("Welcome to Disk Parameter Block Reader\n\n");
fp = fopen("RESULT.DPB","w") ;
mp = dbploc( ) ;
```

```
for( j = 0; j < 15; j++) /* loop to print DPB */
{
    chgtohex( hexval, *(mp + j) );
    printf("%s ", hexval) ;
    fprintf( fp,"%s ", hexval ) ;
}
```

```
for( j = 0 ; j < 2 ; j++ )
{
    fprintf(fp, "\n\n" );
    num = *mp ; /* number of tracks */
    fprintf(fp, "Number of Tracks %d\n", num ) ;
    num = (unsigned)pow( 2.0, (float)*(mp + 2) ) ;
    fprintf(fp, "Group Size (records) %d\n", num ) ;
    num = (0x00ff & *(mp + 5))
        + (0x00ff & *(mp + 6)) * 256 ;
    fprintf(fp, "Last Block %d\n", num ) ;
    num = (0x00ff & *(mp + 7)) + 1 ;
    fprintf(fp, "Num Directory Entries %d\n", num ) ;
    num = *(mp + 11) ;
    fprintf(fp, "Num Directory Sectors %d\n", num ) ;
    num = *(mp + 13) ;
    fprintf(fp, "Num System Tracks %d\n", num ) ;
    fclose( fp ) ;
    fp = fout ;
}
```

```
exit();
```

```
}
```

```
dbploc()
```

```
{
```

```
#asm
```

```
mvi c,31
```

```
call 5
```

```
#endasm
```

```
}
```

```
chgtohex( cp, sum)
```

```
char *cp ;
```

```
unsigned sum;
```

```
{
```

```
#define lowmask 0x0f
```

```
static char hex[] = "0123456789ABCDEF";
```

```
/* Legal hex values */
```

```
*cp++ = hex[(sum/16)& lowmask];
```

```
/* shift high nibble right */
```

```
*cp++ = hex[(lowmask & sum)];
```

```
*cp = 0; /* string terminator */
```

```
}
```

Editor's note: The final article in this informative C/80 series will appear in the SEBHC JOURNAL's January, 1988 edition.

SEBHC JOURNAL

Volume II, Number 5, Page 10

HOW-2-USE HEATH'S MAKEBIOS

(And live to tell about it!)

by
Ross Tobin
2969 Clark Road, Apt 204
Ypsilanti, MI 48197

MAKEBIOS is a program supplied by Heath Company with their CP/M-80 package which lets you make changes and build a new Basic Input/Output System (BIOS.SYS) to fit your particular hardware requirements. This is necessary whenever you add new hardware which the old BIOS doesn't recognise, such as a 289-37 soft-sector controller to your standard hard-sector H89.

Heath provided a tedious and confusing set of directions for using MAKEBIOS. Their method hinges on a submit file, MAKEBIOS.SUB to automate most of the work. But unless everything is EXACTLY the way Heath expected it, the method will fail. Worse, there is usually no indication of what went wrong; out of disc space, wrong memory size, missing files, etc.--they all produce the same dismal result!

Here are my universal instruction notes which will clarify those in Heath's CP/M Version 2.203:

START-UP NOTES --

You will need three discs:

- Disc A - an exact duplicate of CP/M distribution disc Vol I.
- Disc B - an exact duplicate of CP/M " " Vol III.
- Disc C - a new, blank, formatted disc.

(If you don't know how to create exact duplicate discs, see pages 46 - 47 in the Heath CP/M manual.)

DO NOT use the original distribution discs.
Use COPIES ONLY! MAKEBIOS erases some of the files.

- If you have only one or two drives, the system will periodically prompt you with one of the following:

PUT DISK A IN DRIVE A: AND PRESS RETURN
PUT DISK B IN DRIVE A: AND PRESS RETURN
PUT DISK C IN DRIVE A: AND PRESS RETURN

Do as requested, and when requested. The system will keep track of which disc is in drive A:

CREATING A BIOS FOR H17 AND H37 DISCS --

Boot the system with disc A.

Run CONFIGUR (see manual pages 97 - 107)

- If you have 1 drive: configur your system for one drive.
- If you have 2 drives: configur your system for 2 drives.
- If you have 3 drives: configur your system for 3 drives.

Save the configur changes to both Memory and Disc (Option Y)

Type the following underlined words exactly (computer response is not underlined). The 'at' (@) sign means "press RETURN key". Uncapitalised words are comments.

A>B:MAKEBIOS B:1 C:@ (Phase One of MAKEBIOS begins)

BIOS SELECTION MENU (Printed on your screen)

A -- H17 ONLY
B -- H37 ONLY
C -- H47 ONLY
D -- H67 ONLY
E -- H17 AND H37
F -- H17 AND H47
G -- H17 AND H67
H -- H37 AND H47
I -- H37 AND H67
J -- H47 AND H67

ENTER SELECTION : B (Program will pause until you respond; choose BIOS for H17 and H37)

ccz
A>ASM B:BIOS.BZZ@ (Page Zero Assembly begins)

CP/M ASSEMBLER - VER 2.0 (long delay while working)
xxxx (xxxx and yyy change depending
yyyH USE FACTOR on your own BIOS)
END OF ASSEMBLY

A>REN B:BIOS.HX0=B:BIOS.HEX@ (HEX file renamed to HX0)

A>B:MAKEBIOS B:2 C:@ (Phase Two begins)

ccz
A>ASM B:BIOS.BZZ@ (Page One Assembly begins)

CP/M ASSEMBLER - VER 2.0 (long delay while working.
xxxx (xxxx and yyy change depending
yyyH USE FACTOR on your own BIOS)
END OF ASSEMBLY

A>REN B:BIOS.HX1=B:BIOS.HEX@ (rename HEX file to HX1)

A>B:PREL B:BIOS C:@ (PREL locates BIOS files with

HX0 and HX1 extension and
builds a table of relocation
addresses)

A>B:MAKEBIOS B:3 C:@ (Phase Three begins)

MAKEBIOS FUNCTION COMPLETE (New BIOS is now resident on
drive C:)

```

A>MOVCPM17 * C:@          (make system for H/Z17 discs,
-----                  configured for full amount of
                              memory found--to a maximum of
                              64k)

CONSTRUCTING xxX CP/M vers 2.2 (xx represents maximum memory
READY FOR "SYSGEN" OR          your system has up to 64k)
"SAVE 38 CPPxx.COM"           (new system is now in memory)

A>SYSGEN@                   (generate a system disc)
-----

SYSGEN VER 2.203             (SYSGEN begins)

SOURCE DRIVE NAME (OR RETURN TO SKIP):@ (MOVCPM17 put
-                                     the system in
                                       memory--don't
                                       need to read
                                       it from disc)

DESTINATION DRIVE NAME (OR RETURN TO REBOOT:C (write system
-                                     to disc C)

DESTINATION DRIVE NAME (OR RETURN TO REBOOT:@ (reboot CP/M)
-

A>STAT C:BIOS.SYS $R/O@     (set BIOS.SYS file as read-
                              only)

A>STAT C:BIOS.SYS $SYS@     (set BIOS.SYS file as Sys-
                              tem--non-directory file)

A>                          (done; CP/M's ready for next
                              command)

```

The new disc is now bootable configured for H17 and H37 as well as your system's maximum memory size. If you had any problems, re-read the instructions. This method bypasses possible loss of disc space which the distribution SUBMIT file may cause.

Editor's Note: I tried this method AND IT WORKED, even though my CP/M is Ver 2.204! Note that the latest SUBMIT version had been "repaired" by someone at Heath/Zenith, but it never worked for me. Maybe I can make both my H8 and S/H89 to allow booting a 40trk disc in an 80trk secondary drive on either the H17 or H37 side the same way HDOS does. I think I'll try modifying the LLL BIOS89 for my D.G. Electronics Super-89 CPU card. Thank you Ross! Do check the numbers following your name on the address label...

Reader's LETTERS, Continued from page 5

[OK, I think I understand you. You like the JOURNAL.....BUT!

We're trying to satisfy as many readers as possible with all the good stuff we can possibly lay our hands on! Most readers understand how difficult it is to virtually single-handedly compose, edit and publish a semi-technical newsletter reliably TWELVE TIMES A YEAR. Maybe it doesn't seem to you as if we're not trying to improve with every issue, but in we are. And we're trying to do it, using only the H/Z tools which we have rather than obeying some of our more severe critics and squander our money on expensive equipment or outside services. But stick with us, Steve, it HAS to get better! -- ed]

Dear Mr. Geisler,

I admire what you are trying to accomplish with your Society and JOURNAL [for the 8-bit world]. My Z90, although not now my primary computer, will remain a treasured item in my memory as well as in my office. It still holds its' place and space along with my other computers and I anticipate no changes which would relegate it to any lesser status.

I've been a vendor of 8-bit software for some years and, although my stock of the more popular items has become somewhat depleted over the years, I still have a great quantity of Zenith programs in my warehouse, still in original, unopened boxes.

I'm not sure that you are still printing ads "FREE", but I do wish you would publish the enclosed half-page advertisement and bill me for current charges. [No problem; it's in! Only current charge is a one-year subscription @ \$15. -- ed]

Attached you will find a basic module which may be incorporated into any program and that will provide a written dollar and cents amount for any numeric input, up to \$999,999.99. A carriage return without input will terminate the program. I have also attached samples of input and output.

Can you publish the module for your readers use? [You bet-cha! -- ed] If you wish, I can provide other utility modules and programs.

RAYMOND DOTSON, ARRAY software
214 S Berkley Blvd., Goldsboro NC 27530 -- 919-778-4112

[Ray, your ad & listings are in this edition, and we thank you very much, as do our over 300 subscribers. -- ed]

Dear Len,

Inspired by Walt Janowski's remarks in the latest Sextant, CompuMagic have drastically reduce the price of their 8-bit CP/M Special Offer SEARCH and Utility Package from \$50 to \$35. Any one thinking Sextant doesn't support CP/M should read Walt's column and think again. His column is worthy of our support.

MARCIA R. DRESNER, CompuMagic, Inc.
P.O. Box 437, Severn, MD 21144 -- 301-969-8068

[Right on, Marcia! Your new ad's in this issue. You readers, support Marcia by buying her package--write to Walt too! - ed]

SEBHC JOURNAL

Volume II, Number 5, Page 12

A Really, REALLY "CHEAP" Printer

Lee Hart
530 W. Walnut St.
Kalamazoo, MI 49007

Having recently moved, I found myself suddenly without a printer. Being short of cash, I looked around for a bargain; something reasonable but cheap.

Several companies (B.G. Micro, Computer Direct, etc.) have been advertising a dot matrix printer for only \$29.95. It is advertised as "new surplus, from a major manufacturer". A thermal printer, it uses standard 8-1/2" wide thermal paper. Supposedly "PC compatible", it is actually a serial printer, so I gave it a try. It turned out to be IBM's model #5181001, manufactured by Canon for the IBM PCjr.

Good news: It works fine with the H89 serial port, once you get it configured. The printer is small (12" x 9" x 3.5"), reasonably fast (50 chars/sec), and extremely quiet. There are no ribbons to replace. Print quality is good, though certainly not letter quality. The commands are a subset of the Epson MX-80, so it works with most software that is meant to control the Epson. [Editor's note: We tried it with both CP/M and HDOS on my computer; it worked fine with ASCII output.]

It prints all of the regular 96 ASCII characters (plus the 256-character IBM PC set) in a 5x8 dot matrix, lower case and with true descenders. The printer supports 40, 66, 80, and 136 characters an inch (CPI). Double width and underline are supported, but there're no emphasized, enhanced, or near-letter-quality modes. It apparently has graphics (judging from the bizarre things it prints when the baud rate is wrong), but without a decent manual I don't know Canon's BSC codes. It definitely doesn't compare with the Graftrax-equipped Epson.

Bad news: The thermal paper is expensive--about \$3.25 for a 100 foot roll (or 3 cents a page). Being a roll, printouts strongly tend to curl up. Loose 8.5x11" sheets are available, but I haven't yet found any fan-fold thermal paper.

The manual is worthless. It's completely void of a single technical fact. Not even the baud rate is specified. Calls to B.G. Micro and IBM were a waste of time; each referred me to the other. They were invariably polite and cheerful, but didn't know anything at all about the printer. IBM was reluctant to admit they'd ever sold it (so much for IBM's legendary support).

Interfacing: The printer has a permanently-attached cable with a female DB25 connector at the end. This makes it easiest to plug into the H89's modem serial connector, labelled "DTE 330-337". For CP/M, run the CONFIGUR program, and set the LST: device for 1200 baud, port 330. Set hardware handshaking to use the RTS line, active HIGH. Also remember

to change the UBI: and UP1: device to use port 340; you can't have the same port number assigned to two different devices.

If you prefer, you can replace the connector with a male DB25 and use the normal printer port, 340. There are only 3 wires to connect; serial data out, RTS, and ground.

Conclusion: The IBM #5181001 is a real bargain at \$29.95. It's a great 2nd printer, especially if you need something quiet or small and portable. [Or in a dire emergency! -- ed]

IBM #5181001 printer: \$29.95 printer, cables, 1 roll of paper
\$ 4.00 shipping and handling

\$33.95 actual cost

from: B.G. Micro
P.O. Box 280298
Dallas, TX 75228
(214) 271-5546

[Editor's note: Lee demonstrated this printer, using my H89's serial modem port as described. The printer's impressive, but I had to re-configure my system disc afterward. If you are going to use this cheapie in partnership with the daisy-wheel printer Lee covered last month, re-configuration isn't necessary; just make a different boot disc for each printer. Next month: Lee's "how-2" article on restoring an H47-type drive.

=====

THE LIGHTER SIDE... ON THE LIGHTER SIDE... ON THE LIGHTER SI
=====

We've been getting a lot of flack from readers about spelling and hyphenation. Here's a sign we recently saw. Did the painter have anything particular in mind? Maybe he jist kood-unt spel tew gud (or hyphenate correctly)...

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EQUAL RIGHTS? Car-wash owner George Vargish thinks New Jersey civil rights officials are all wet! His troubles started when a male patron complained that George's "Ladies Day" discount amounted to sex discrimination. The state agreed; a car-wash is a public accomodation--everyone must pay full price. But George wasn't deterred. He's skirting the law by offering a 50-cent discount on some days to anyone--male or female--who turns up in a skirt or dress. Civil rights activists are studying their next move.

HDOS or CP/M MBASIC-80 CHECKS.BAS

Listing Courtesy of Ray Dotson, ARRAY software

```

100 PRINT CHR$(27)"B":FOR I=1 TO 9:READ UNIT$(I):UNIT$(I):
    UNIT$(I)+" ":NEXT:FOR I=1 TO 9:READ TEEN$(I):IF I>2 THEN
    TEEN$(I)=TEEN$(I)+"teen "
200 NEXT:FOR I=1 TO 9:READ TEN$(I):TEN$(I)=TEN$(I)+" ":NEXT:
    ON ERROR GOTO 2300
300 LINE INPUT "Enter an amount.... ";TOT$:IF VAL(TOT$)=0 THEN
    BND ELSE CENT$="":PRINT:PRINT ">> ";
400 IF LEFT$(TOT$)="" OR LEFT$(TOT$)="0" THEN TOT$=MID$
    (TOT$,2):GOTO 400
500 J=INSTR(1,TOT$,"."):IF J THEN TOT$=LEFT$(TOT$,J-1)+MID$
    (TOT$,J+1)
600 J=INSTR(1,TOT$,"."):IF J THEN CENT$=MID$(TOT$,J+1):TOT$=
    LEFT$(TOT$,J-1)
700 CENT$=LEFT$(CENT$+"00",2):IF TOT$="" THEN TOT$="0":PRINT
    "No ";
800 X=ASC(TOT$)-48:ON LEN(TOT$) GOSUB 1100,1300,1500,1700,
    1700,1300,1500,1940
900 IF LEN(TOT$)>1 THEN TOT$=(MID$(TOT$,2):GOTO 800
1000 PRINT "Dollars and "CENT$" cents <<":PRINT:PRINT:GOTO 300
1100 IF TEEN THEN TEEN=0:EX$="":GOTO 1900
1200 PRINT UNIT$(X);:RETURN
1300 IF X=1 AND MID$(TOT$,2,1)>"0" THEN TEEN=1:RETURN
1400 PRINT TEN$(X);:RETURN
1500 IF X=0 THEN RETURN
1600 PRINT UNIT$(X)"Hundred ";:RETURN
1700 IF TEEN THEN TEEN=0:EX$="Thousand ":GOTO 1900
1800 PRINT UNIT$(X)"Thousand ";:RETURN
1900 PRINT TEEN$(X)EX$;:RETURN
1940 PRINT:PRINT "999,999.99 Maximum Input Amount!":GOTO 300
2000 DATA One,Two,Three,Four,Five,Six,Seven,Eight,Nine
2100 DATA "Eleven ","Twelve ","Thir,Four,Fif,Six,Seven,Eigh,
    Nine
2200 DATA Ten,Twenty,Thirty,Forty,Fifty,Sixty,Seventy,Eighty,
    Ninety
2300 IF ERR=9 THEN PRINT:PRINT:PRINT TAB(13)CHR$(7)"You MUST
    use Digits!":PRINT:RESUME 300
2400 END

```

A Typical Session with CHECKS.BAS

RUN

Enter an amount.... 123.45

>> One Hundred Twenty Three Dollars and 45 cents <<

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Please make cheque or money order payable to L.E. Geisler. Thank you.

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The SEBHC JOURNAL's Back Page

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- * Subscriptions are US\$15/year in Canada, Mexico, the USA and its possessions (all others \$25/yr) and start in month following receipt of application. Please make cheques or money orders payable to L.E. Geisler. Single back-issue copies by special order--allow 5 weeks for processing.
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- * The SEBHC JOURNAL is composed, edited and published by L.E. Geisler at 895 Starwick Drive, Ann Arbor, MI 48105. Phone 313-662-0750, 9am - 6pm Eastern Time, Monday thru Friday. Off hours, try 313-769-6052 (home).

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