HOMEBREW COMPUTER CLUB

NEWSLETTER

THIS MONTH - Robert Reiling

HOMEBREW COMPUTER CLUB ONE YEAR OLD - The first club meeting was held
March 5, 1975. Gordon French and Fred Moore put it together and are
due credit for starting the first amateur computer club in the Bay
Area. Thirty-two people attended that meeting and now attendance ex-
ceeds 250 people. The Newsletter is currently distributed to approx-
imately 600 people each month, mostly in the Bay Area but many are
sent throughout the United States and some are sent to Canada and Over-
seas.

This growth can be attributed to an unusual interest by people in
hobby computing, availability of hardware that is affordable, and the
need to exchange ideas and information about hardware and the ever
necessary software. Currently, no single source really covers the in-
formation needed by the computer hobbyist. The HOMEBREW COMPUTER CLUB
is a meeting place where every two weeks, if one desires, he can meet
and talk with someone with a common interest. New things may be learned
and problems can be solved.

The Club's meeting format is unique in that every meeting is conducted
in a forum fashion. Lee Felsenstein moderates and conducts the "map-
ping period" so that during the following "random access period" one
can quickly contact someone with compatible interests.

No meeting to date has been dull and no doubt this can be attributed
to our unique approach. Let's keep it that way with an opportunity
for everyone to be involved.

FLEA MARKET - Mark this on your schedule. Randy Wigginton has again
arranged for flea market space at Bellarmine College Preparatory in
San Jose. The date is April 21, 1976 and the time 7:00 P.M. This is
the place to buy and sell computer goodies. Contact Randy after seven
if you need directions, telephone 732-1656 in Sunnyvale.

MOS TECHNOLOGY - Peter Schnal telephoned following the last meeting to
explain that MOS Technology is only dropping the MCS6501 which was pin-
compatible with Motorola's MC6800. MOS Technology will continue to
produce and market five microprocessors in its 6500 family, which are
not pin-compatible with Motorola's MC6800. The companies have agreed
to a cross license relating to patents in the microprocessor field.

SUPER SIMPLE FLOPPY DISK INTERFACE - The Computer Hobbyist has devel-
oped a simple, inexpensive controller for floppy disk drives. Issue
number nine has part 1 of a two part article. It is excellent and if
you are interested in a floppy disk system you should read it. The
Computer Hobbyist is available by subscription at $6.00 per year.
Write TCH, Box 295, Cary, NC 27511

Sasolburg
South Africa

Biccari
Italy

HOMEBREW COMPUTER CLUB

As normal it is again the Americans that take the lead in computer hobbyist clubs.

After a troublesome search I have found that no such club in any form exists in South Africa.

In my area there are quite a few people interested in forming a club. Unfortunately it is quite discouraging that no circuits are available on 8008 or 8080 microprocessors.

At a beginning stage our finances are limited so we decided to try and find means of building the system ourselves. In this circumstance we decided to contact your club to try and acquire the following:

1. Circuit for complete 8008 or 8080 system (For us P.C. board layout diagrams are almost a must.)

2. Circuit for T.V. input/output system.

We would gladly pay an amount for your service. As we are eager to start, we would appreciate an answer soon.

Correspondence with your club members would mean a lot to us.

I hope we are not asking to much.

Yours faithfully,
F. J. Pretorius

F. J. Pretorius
19 Adumstr
Sasolburg
South Africa

Dear Sir,

At the end of the article COMPUTER BITS by Jerry Ogdin in the January issue of Popular Electronics there was a list of hobbyist clubs. I chose your club, so if you will accept me I would like to join your HOMEBREW COMPUTER CLUB. You could ask why I want to join and it would be a little difficult to explain it for me in English. I may try it; I am a 30 year old man, always been a DO IT YOURSELF hobbyist from mechanics to chemistry to boating to painting to sculpture and so on, I have always liked to do things with my hands, but lately I fell in love with electronics and particularly with mini-computers, but I am not ready yet to go into constructing one from kits. I know my present limits, even if I did a COBOL programming course and so I know something about the computer.

Before I start to construct something I want to know everything possible about the matter, and since in Italy there are no magazines, no books, no data where I could get the information and the knowhow I need, that is the main reason for joining your club. I want to exchange or better learn your experiences, to know your advices, to have your help, to know where to get some books, data sheets, electronic components, and the like.

Hoping you would accept me as a member in your club and eagerly expecting your reply, I am yours.

Salvatore DI FRANCO
VIA ANNUNZIATA No. 6
71032 BICCARI (FOGGIA)
ITALY

HOMEBREW COMPUTER CLUB members if you can assist in any way take the time to write these people. Better yet send them some technical material. You can be sure it will be appreciated.

Dear Mr. Gates,

I was gratified to see your letter published in the HOMEBREW COMPUTER CLUB NEWSLETTER. I am one of the 10% minority who <u>paid</u> for Altair 8K BASIC. One of the reasons I invested a substantial amount of money in an Altair with 8K of dynamic RAM memory and I/O board, was so I could get 8K BASIC, which I plan to use for accounting and other applications.

As a professional programmer/analyst with almost 10 year's background in accounting, manufacturing and research applications using COBOL, PL/1 and assembler language, I deplore the flagrant abuse of copyrighted software apparently practiced by many hobbyists, and some professionals too. What is the difference between stealing software and someone's stereo outfit? In either case the guilty party is a common thief.

There appears to be a doubt in some people's minds that charges for infringement of software copyrights would stand up in court. Unfortunately, computer programs are very easy to copy and steal. I'm not a lawyer, but I read in Computerworld and other industry publications about cases which <u>have</u> stood up.

I have no objection to legitimately paying $75 for 8K BASIC, or to being required to purchase suitable hardware in order to qualify for that price. However, I resent the fact that people are getting free bootlegged copies.

I would like to develop some good software for business and accounting applications using microprocessors. If I were to spend hundreds of hours of my time - not to mention some money too - on a general ledger package, why should I give it away for someone else to sell services on? We programmers have to eat, too! So why should BASIC or APL be given away?

<div align="right">Charles L. Pack</div>

<u>INTERMETRICS PL/M6800 COMPILER</u> - Walton Ferris, Jr.

The principle developer of this compiler is Glen Bingham. The name of the compiler is PL/M6800. It compiles for the 6800 microprocessor, in a Motorola Loader format, and is as compatible with PL/M (for the 8080) as possible. The I/O has to be different. It was developed by Intermetrics, 701 Concord Ave., Cambridge, Mass. 02138, (617) 661-1840, and is available now through GE timesharing or may be purchased ($1000). It is about 200K bytes long and runs on 360 or 370 under OS. The object code is put onto disc and one may print only the error list file, or the source with error list, or the assembly code, etc. A 160 page Specification Manual is available from Intermetrics for $10 which is sufficient for those that know how to use a procedure oriented language like PL/1 or ALG01. At the Palo Alto GE timesharing office, 969-3772, the person to talk to is Bob Goldstein, who also knows about the programs for Intel, Motorola, TI, NEC, etc. I wonder if someone local could arrange for this little 200K program to be put on some company's 360 for our use, or if some company who buys it for their own use could allow us off-shift access to it? Alternatively the 6800 users could perhaps make arrangements with GE to share one account; Bob is willing to set up an ID check system but there are also some economic hurdles.

OCTAL LOADER PROGRAM - Charles L. Pack

Are you tired of loading your Altair or Imsai through the switch panel? You say it took you 2½ hours to enter 698 bytes and then the power failed? Well, here is an octal loader program which allows you to type in your program, three digits per binary byte, on just about any keyboard. The octal loader itself occupies only 86 bytes; after it has been entered for the first time you can punch it out on paper tape.

This loader also checks your data for errors. Each program byte consists of a three-digit octal number whose value is between 000 and 377, inclusive. Only the digits 0 through 7 are allowed, and the first octal digit within each byte must not be greater than 3. Incorrect digits, alphabetic characters and special characters are ignored. Valid digits are "echoed" to your output device (normally a Teletype printer or a video display).

In addition, you may format your printout by using the carriage return and line feed keys and the space bar. This is desirable because a Teletype machine does not automatically start over at the beginning of a new line when the carriage reaches the end of the current line. So, instead of your output looking like 161061124000333000346201 it can look like this: 161 061 124 000 333 000 346 201 . Furthermore, you can segregate parts of your program on different lines, to facilitate proof reading. The carriage return, line feed and space characters are not stored in the computer; all program bytes are stored consecutively.

The hardware requirements for this program are an 8080-based microprocessor with at least 256 bytes of memory; a suitable I/O interface, an ASCII-encoded keyboard and some type of display. The latter two items can be a Teletype machine or a "TV Typewriter". I have implemented the octal loader on an Altair 8800 equipped with 4K bytes of memory, a Processor Technology 3P+S I/O board and an ASR-33 Teletype machine.

In the listing, all numbers are in octal except STMT which is the statement number in decimal. PG is the memory page and ADDR is the memory address within the page. The octal loader begins at location zero and occupies 86 bytes. The second and third bytes of the loader (in stmt. no. 1) are the memory address and page number, respectively, where it will start loading your binary data. You can use any address you wish here, as long as it is above the loader.

The address jumpers on your I/O interface board must be set for 000 and 001. 000 is for the status byte and 001 is for the data byte. The contents of the bytes at locations 000,015 and 000,017 (in statements numbered 6 and 7) will depend on the type of I/O interface you are using; more specifically, which status bits you are using for "receiver data ready" and "transmit buffer empty". On my 3P+S I/O board I used the rightmost bit (bit 0) for "data ready" and the leftmost bit (bit 7) for "transmit buffer empty". I intended this to be compatible with the Altair 88-SIO board revision 1, or revision 0 with the status bit

modification. If you have an SIO board revision 0, you will need to
change the contents of bytes 000,015 and 000,017 to octal 240 instead of
octal 201. If you have a 3P+S I/O board, you can use any status bit
configuration you want, by changing the jumpers in area "G". On the
Altair SIO board, the choice of status bit is fixed by the hardware;
there is no jumper.

STMT	PG ADDR	OBJECT CODE		S O U R C E S T A T E M E N T	
1	000 000	041 000 001		LXI	H ;Load memory address
2	000 003	001 000 002	NXBYTE:	LXI	B ;B is byte counter; C is ;temporary work register.
3	000 006	161		MOV	M,C ;Zero out the memory byte.
4	000 007	061 124 000	NXDIGT:	LXI	SP,STKADD ;Load stack pointer
5	000 012	333 000		IN	0 ;input status channel
6	000 014	346 201		ANI	201 ;zero out unwanted bits
7	000 016	376 201		CPI	201 ;is data available?
8	000 020	300		RNZ	; back to NXDIGT if not
9	000 021	333 001		IN	1 ;input data channel
10	000 023	346 177		ANI	177 ;zero out parity bit
11	000 025	376 060		CPI	060 ;is character less than 0?
12	000 027	332 051 000		JC	TESTCR ;jump if true
13	000 032	376 070		CPI	070 ;is character > 7?
14	000 034	320		RNC	; back to NXDIGT if true, ; character is invalid.
15	000 035	110		MOV	C,B ;
16	000 036	015		DCR	C
17	000 037	015		DCR	C ;is this the first digit?
18	000 040	302 066 000		JNZ	ECHO ;jump if not
19	000 043	376 064		CPI	064 ;is character > 3?
20	000 045	320		RNC	;back to NXDIGT if true, ;character is invalid because ;first octal digit must be <= 3.
21	000 046	303 066 000		JMP	ECHO ;we have a valid character.
22	000 051	376 015	TESTCR:	CPI	015 ;carriage return?
23	000 053	312 066 000		JZ	ECHO ;jump if true
24	000 056	376 012		CPI	012 ;line feed?
25	000 060	312 066 000		JZ	ECHO ;jump if true
26	000 063	376 040		CPI	040 ;space?
27	000 065	300		RNZ	;back to NXDIGT if not, ;character is invalid.
28	000 066	323 001	ECHO:	OUT	1 ;output data channel to ;"echo" a valid character.
29	000 070	376 060		CPI	060 ;is character a digit?
30	000 072	330		RC	; back to NXDIGT if true.
31	000 073	346 007		ANI	007 ;zero out all but the three ;rightmost bits.
32	000 075	110		MOV	C,B
33	000 076	015		DCR	C ;is this the third digit?
34	000 077	372 114 000		JM	ORMEM ;jump if true
35	000 102	015		DCR	C ;is this the second digit?
36	000 103	372 111 000		JM	SECND ;jump if true
37	000 106	007		RLC	;shift
38	000 107	007		RLC	; left
39	000 110	007		RLC	; three bits
40	000 111	007	SECND:	RLC	;shift
41	000 112	007		RLC	; left
42	000 113	007		RLC	; three bits
43	000 114	266	ORMEM:	ORA	M ;OR A-register
44	000 115	167		MOV	M,A ; with memory
45	000 116	005		DCR	B ;decrement digit counter
46	000 117	360		RP	;back to NXDIGT if we haven't ;yet processed three digits.
47	000 120	043		INX	H ;increment memory address
48	000 121	303 003 000		JMP	NXBYTE ;back to enter another ;byte.
49	000 124	007 000	STKADD:	DW	NXDIGT

T I N Y   B A S I C   6 8 0 0

Tiny BASIC is a proper subset of Dartmouth BASIC, consisting of the following statement types only:

LET	IF	RETURN	LIST
PRINT	GOTO	END	RUN
INPUT	GOSUB	CLEAR	

Arithmetic is in 16-bit integers only with the operators + - * / and nested parentheses. There are only the 26 single letter variable names A,B,...Z, and no functions. There are no strings or arrays. This language has been defined and discussed extensively in recent issues of PCC and the offshoot newsletter.

For the 6800, this language has been augmented to include the functions, RND, USR, and PEEK and POKE, giving the user access to all his system components in the 6800 from the BASIC program. While Tiny BASIC specifies line numbers less than 256, this version allows numbers to 32767.

The interpreter fits in 2K of memory and uses another 200 bytes for temporaries (in page 0). This leaves all the rest of memory for user programs. It is available in two versions, one for RAM-based systems (0-08FF) and one for the AMI single board computer "PROTO" (program resides in pROM E000-E7FF).

For a copy of the object tape and user manual send $5.00 to:

     Tom Pittman, P.O. Box 23189, San Jose, CA 95153

Please specify whether it is for PROTO or RAM-based system.

This is intended as a low-margin enterprise. If the response is good there will be more software available on the same basis. If there is little interest, or if there is heavy pirating, this will be considered an expensive experiment.

LO*OP CENTER REPORT

LO*OP Center is alive and well in Cotati! We have just finished giving a 40 hour course in Computer Literacy to 4th, 5th, and 6th graders from our local public school. Anyone with ideas to add to our course or interest in giving such a course please contact us. Our staff is now engaged in consolidating our material for publication. The book should be useful to teachers and self-directed students as well as hobbyists who would like to get involved with teaching. Yours from clickity-clickity land, Liza

     LO*OP Center, Inc., 8099 La Plaza, Cotati, CA 94928
     Telephone number (707) 795-0405

CLUB MEETING SCHEDULE

HOMEBREW COMPUTER CLUB meetings are held every two weeks; April 14th, April 28th, May 12th, etc. Location is Stanford Linear Accelerator Center, Menlo Park, California. Meetings begin at 7:00 P.M. Ask the guard at the gate for directions to the meeting room.

Status Report: **Dr. Dobb's Journal of Computer Calisthentics and Orthontia**

Dr. Dobb's Journal started out to be a three-issue quickie for distributing information about Tiny BASIC, an interpreted subset of BASIC that is simple to implement on micros with minimal memory. The first issue was 19 pages, xeroxed on letter paper, mailed around the end of February. The response to it made it evident that there are some significant information gaps left by the current major computer hobbyist publications. They obviously have their hands (and pages) full, just covering hardware and relatively small bits of software.

Therefore, Peoples' Computer Company decided to convert the *Journal* into a regular and ongoing publication to fill those gaps. They hired several new staff members, including a full-time Editor for the *Journal*. After a start-up pause, the system is up and running. The second issue is 36 pages, to be mailed April 12th. The third issue is scheduled to go out by April 26th, with two more issues being produced in May. Thereafter, they will settle into a regular monthly publication schedule, excluding July and December. Incidently, these are "all meat" pages; there are no display ads.

About those information gaps —   The *Journal* will function primarily as a reference publication. Primary focus will be on:
— Comprehensive details for implementing specific systems software. Tiny BASIC is merely one example. They are already pursuing the development of a tiny APL, MAPLE, a CAI language, PILOT-73, a structured assembler, a floppy disc file system, and anything else they can find to place in the public domain. Their second issue carries complete implimentation documentations and source code for the Texas version of Tiny BASIC (TBX), Steve Dompier's music article, notes on a high level language being developed for the 8008/8080 by Scelbi, TBX mods for the TVT-2, and more. Issue 3 will include complete documentation and source code for a Denver version of Tiny BASIC, notes on a TV Dazzler software contest and a manufacturer-independent software repository, and much more.
— Reprinting articles and schematics from many of the club newsletters, out-of-print periodicals, and publications that are not generally available to the computer hobbyist.
— Detailed "blue skying", outlining projects they feel are realizable in the immediately foreseeable future. Tiny BASIC was just the first. As these projects are implemented, they will publish the details. For example, the second issue contains the first two of a forthcoming series of articles on home computer speech synthesis. They discuss Votrax, which has been manufacturing phoneme generators for some years. Until now, these have been peddled for $3500 and up. After two lengthy conversations with the *Journal* Editor, Votrax is proposing a phoneme generator kit for hobbyists, composed of established, debugged, in-production subsystems for $1K. *This allows the home computer to perform unlimited English language speech synthesis!*
— Indices for *all* of the major computer hobbyist periodicals, and for selected articles from a number of other publications. This is sort of a "Reader's Guide to Periodical Home Computer Literature."
— Lists and directories of: computer stores and distributers, sources of used computer equipment, clubs and organizations, home computer users & their equipment, etc..
— They will also carry classified ads, Letters to the Editor that have technical or critical content, book reviews, news quickies, and articles best categorized as "consumer protection" notes, and "computers and society" articles.

They are totally subscription-supported, so if the above sounds interesting, you might consider a trial subscription: $1.50 for a single issue, $3 for the first three issues, or $10/year (10 issues). Address: PCC, Box 310, Menlo Park 94025.

BULLETIN BOARD

FOR SALE OR TRADE - Cartrivision CCTV-VTR. Front panel, knobs, no
cabinet. Color record from TV, playback from tape cartridge. B-W
camera, zoom lens, mike, with cables, RF modulator, many hours of
blank tapes, one pre-recorded tape, and documentation. $500 or trade
for IC's (8080), keyboard, monitor, PCB's, I/O (typewriter/printer/
cassette), etc. Have Cybercom desk with CC and P.S. Pat Rankin,
1085 Tasman Dr. #29, Sunnyvale, CA 94086, telephone 734-5985

WANTED - Paper tape listing of 4K assembler or Tiny BASIC for 8080.
Or can someone copy same on 1702's for me? I have 4K bytes of 1702's.
Glenn Nelson, Box 1846, Brown University, Providence, RI 02912

USED KSR TELETYPES - Also, other terminals and acoustic couplers for
sale. D. R. Reichel, Anderson Jacobson, Inc., 1065 Morse Avenue,
Sunnyvale, CA 94086, telephone (408) 734-4030.

POWER SUPPLY - Computer grade. 20 units available, new, each supply has
three outputs: 5VDC @ 12a., 15VDC @ 2.8a., 15VDC @ 2.8a, all outputs are
filtered, regulated, and variable. Price $100 plus 10% for postage and
handling. Ten day guarantee if returned in good condition, 25% off if
ordered before May 1, 1976. M. D. Rivers, 28 Leyfred Terrace, Spring-
field, Massachusetts 01108, telephone 732-5891

SEMINAR - SCAMP technical description that defines SC/MP and its
supporting compliment of software and hardware. April 21, 1976 from
8:30 - Noon, Palo Alto, CA, Rickey's Hyatt House 4219 El Camino Real.
Presented by Elmar and National, Wade Miracle is speaker.

**HOMEBREW
COMPUTER
CLUB**

NEWSLETTER

Post Office Box 626
Mountain View, CA 94042

FIRST CLASS MAIL