NIBBLES & BITS

single issue: $4.00

DESIGNED and PRINTED with the amazing ADAM™ computer (using PowerPAINT, SpeedyWrite, and ShowOFF II).

PUBLIC NOTICE

"Nibbles & Bits" is published monthly by DIGITAL EXPRESS. Individual issues may be purchased for the current month or for a back issue for $4.00; the premier issue was July, 1986. Issues were not published for three months: Dec '87, Jan '88, and Feb '88. The standard subscription rate for one year (12 issues) is $24.00 in the USA, its possessions, and Canada; and, the annual rate in foreign countries is $30.00. The standard subscription rate for six months (6 issues) is $15.00 in the USA, its possessions, and Canada; and, the semi-annual rate in foreign countries is $20.00. ALL subscription issues are sent by U.S. mail, FIRST CLASS. Issues are mailed no later than the 15ᵀᴴ day of the issue month.

We welcome contributions of original reviews, programs, articles, questions, and comments. Please include your subscription ID number from your mailing label on all written correspondence to us. Thank you. Please include an SASE (Self - Addressed Stamped Envelope) if you want a written reply.

Your subscription ID number is on the first line of your mailing label (affixed to the newsletter). It is a 10 digit code. The first four digits are the month and year of the final issue in your current subscription. Following the ID number is a brief message. If this is your final issue, the message will read "FINAL ISSUE!!!". If this is your penultimate issue (next to last), the message will state "TIME TO RENEW". Otherwise, the message will apprise you of the exact number of issues remaining in your subscription (excluding the current issue). Please verify this information each month.

To insure that you don't miss any issues, please renew early and let us know promptly of any address change. Please include your subscription ID number on the address change notification (you can get an address change kit free from your local US post office).

GENERAL INFORMATION

Most issues include a special offer on software purchases; these are explained as time limited offers. If you receive N&B outside the North American continent (Australia, Isreal, England, and South Africa, for example), we will extend these deadlines to you by 30 days.

If you have products or services of interest to ADAM owners, please let us know. We try to keep our readers apprised of all the latest news concerning the ADAM. We also offer half page (7" across by 4.5" down) commercial advertising slots for $50.00 per issue (effective April 1, 1988). "Camera ready" artwork must be received at least 30 days prior to the first day of the issue month. Circulation: 2400+.

Product orders are processed within 24 hours of receipt. Where possible, orders are shipped via UPS. Backordered items are shipped at our expense. Order processing may be delayed by legal and traditional holidays.

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EDITOR`S NOTE
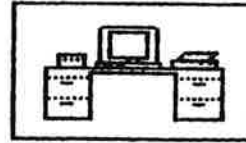
On the political scene over the past few years a few rhetorical quips have gained some salience in conversations. I believe it started with "What did Nixon know and when did he know it?". It's continued more recently with "What did Reagan know and when did he forget it?". And one of the latest is "Where was George and when did he hide there?". Meanwhile, outside the bipartisan verbal arena, back down to earth with ADAM, some are eagerly asking "Where is GoDOS and when will it be released?" This one is deserving of a reply.

First, though, let me apologize for its delay. There are numerous reasons for its belated release.   One of these is the enormous amount of testing to ascertain that ALL the routines are compatible with one another. I'm fairly certain now that all the routines are included that will be in the initial release.

Another central component in the delay is my having listed our company phone number. I'm a talker and I love talking about ADAM. And most of you that I've spoken with apparently love to discuss ADAM too. All the phone conversations in recent weeks have really put me behind schedule. I kept a phone log the third and fourth weeks after listing our number, 47 and 62 hours respectively (these are actual weekly totals). Although I do enjoy (very much) talking with you it was taking more time than a normal work week.

For the last couple of weeks I've had to leave the answering machine turned on most of the time, so that I can get caught up and get GoDOS and MSXR into the hands of the 300+ who are already on waiting lists.   I still loggon OrphanWare's BBS about twice a week. And, in just a few weeks, we'll start our own SIMPLE bulletin board.

Hopefully, I'll have more details on our board (the name, call-in time, parms, etc.) next month.   Alan Neeley, of ADAMlink of Utah, is helping me to get it set up. We'll only have a general message board and private E-mail. My goal is that the board will greatly increase communications with our readers and also allow me to have more time for programming (... two birds, one stone). When we start it up, we'll have one night a week for voice call-ins and the rest will be for BBS use.

Now back to GoDOS; I'm working on it every day. It's been over two years since I've taken a vacation and I had planned on taking one in AUGust, but I've put it off (twice, losing reseveration money both times) until this, GoWRITER, and MSXR are finished. I mention this so that you'll know that I'm wanting to get it out just as much as you're wanting to get it in your system. It shouldn't be more than two or three weeks after you get this issue.

Solomon Swift

ADAM NEWS AND UPDATES

□□□ A couple of months ago we reported that Coleco might be on the verge of filing for bankruptcy protection from its creditors. In case you haven't heard yet, they have done so -- the nation's fifth largest toy company and the developers of ADAM filed Chapter 11 a couple of weeks ago. Analysts expect the firm to emerge from the proceedings a much smaller manufacturer.

□□□ We've added five more PD graphics volumes for use with PowerPAINT. These are: N&Bpix024, N&Bpix025, N&Bpix026, PaintMATES 08, and Paint-MATES 09.

□□□ Over the past three months we've received many PD graphics dontations. We'd like to offer a special THANK YOU to the following readers for helping so much to boost the graphics library.

David B. Carmichael
Patricia J. Herrington
Rick Lefko
Alan Neeley
Joseph M. Quinn
Tony Patterson
Bryan Payton
Bienvenido Rodriguez
Anthony Yulo

□□□ Don't forget to let us know if you'd consider getting the 10 meg hard drive or the print head scanner. Whether or not these projects come into fruition will depend on written replies from ADAM owners.

□□□ ADAMzone Publishing will start mailing their bi-monthly ADAM newsletter, NetworkADAM NewsINFO, in September. To get a FREE copy of the premier issue, just send an SASE to the following address.

ADAMzone Publishing Company
17 Capstan Road
West Milford, NJ 07480-4816

□□□ Anthony Yulo, a long-time ADAM supporter, has recently decided to sell his ADAM system ... in one large package ($850, OBO). He has lots of add-ons, software (commercial and PD), and books. Those interested may call or write to the following:

(701) 727-4854

111-2 Spruce Street
Minot AFB, ND 58704

□□□ Last month we mentioned the new DISK PAK service to N&B subscribers. We only expected a handful of replies; but, already more than 20% have joined. You should get the July & AUGust programs within three days of getting the AUGust issue. It's only $12.00 for six DISK PAKs per year (mailed during even months to include pgms for that and the previous month; disk only).

□□□ ZADAM ELECTRONICS, a new ADAM support firm, plans to release SUPER BASIC PLUS in a couple of weeks. It will be the first MicroSoft compatible BASIC for the ADAM. And it is reported to be packed with features (much more than SmartBASIC). Until September 1, you can get it at the special introductory price of $19.95. The regular price is $24.95. Order from:

Computer Quorum of America
Route 2, Box 14-B
Spring Mills, PA 16875-9720

□□□ B&T SOFTWARE has developed a new revision to the disk drive EPROM (specify drive size) which greatly increases format and R/W access time. For example, it will format a 720K disk in one minute and five seconds. You can order a replacement EPROM (with instructions) from them for $29.95. After you get the new EPROM, they'll pay you three bucks for the old one.

1010 Westminster
Garland, TX 75040

□□□ B&T also has 720K disk drives for $295 and 320K drives for $265. Both come with the fast EPROMS. Until September 1, they're offering the 320K disk drive at the special price of just $250.

□□□ Walter's Software has just released a new spelling checker for ADAM, "Spelling Aide", that can make use of any size XRAM card for dictionary storage. They plan to release a PrintSHOP type program early this Fall. It will have lots of graphics features, support dot matrix printers, and be able to use CLIPPER clip art.

□□□ Norman Castro now has game instructions for the ColecoVision/ADAM (over 136), Intelli-vision, Atari 5200, and the Nintendo system (over 85). Send him two 25 cent stamps for FREE samples.

809W 33RD Avenue
Bellevue, NE 68005

□□□ OrphanWare is currently holding another contest. The ADAM user who uploads the most PD software thru the middle of AUGust will win a (FREE) 256K expander and PIA2 parallel interface. Join on-line for details. Also see their new ad in this issue.

□□□ ADAMlink of Utah is currently offering a subscription special to their excellent bimonthly ADAM-only newsletter. Six issues is normally $15; for a limited time new subs are being accepted for just $10.

2337 South 600 East
Salt Lake City, UT 84106

□□□ We had a minor typo in the program to patch PowerPAINT for access to three disk drives last month. Add the following to line number 560: ":POKE 28002, 4".

□□□ Due to good response, we're repeating a special DIGITAL EXPRESS offer. Until 15 SEPT, get 25 DS/DD black disks with sleeves and tabs for only $9.95 (can also be used with standard 160K drives). For $10.95, same offer except with TYVEK™ sleeves. Also, get two Black Panasonic KX ribbons for just $8.95.

□□□ Here's another DEI special that expires on 31 AUGust. Get Mr. T-SEARCH and our two SEARCH SETS for just $24.95. This is a very nice "word search" creater supporting both a DMP and the ADAM printer.

□□□ "Temple of the Snow Dragon", by Digital Adventures, is the first in a trilogy of challenging adventures with great graphics for the ADAM; we have seen a beta version. This new ADAM support firm plans to release this one on October 1.

□□□ If you've ordered any PIX PD volumes from us and did not get the printed catalog list, just let us know on your next order. We'll include them free of charge.

□□□ We now carry the excellent **File Manager 2.1** reviewed last month. Just $16.95 on disk or DDP.

□□□ A few months back we reported that some ADAM software developers were involved in legal action against a piracy ring operating out of Iowa. Coleco was even giving out their name and phone number (no longer). Now the company has moved to Nebraska. Many thanks to the three ADAM owners who sent us their catalog of pirated software.

□□□ Rob Friedman, CP/M SYSOP of the ADAM section on CompuServe is interested in starting a user's group in the Long Island area. Those interested should write to:

3814 Ocean Avenue, T-2
East Rockaway, NY 11518
CIS: 73267,742

□□□ THANK YOU Paul Pappas for mentioning DIGITAL EXPRESS so favorably in your article in *Computer Shopper* (AUGust issue). For those who haven't read it yet, this is an excellent discussion about what's available for ADAM today. ADAM just keeps getting better and better...

□□□ **Las Vegas Craps** is a new game from Al Roginsky. It features great graphics (colorful, detailed, and some animation too), good sound, and realistic game play. In fact it plays JUST LIKE a real game of craps, the popular dice game. It also comes with a gaming book explaining the rules. In addition to being a lot of fun to play, it also is very good practice for the real game. Available on tape or disk for just $16.95. You may order directly from the author or from DIGITAL EXPRESS.

4327 Thorndale Place
Las Vegas, NV 89103

□□□ We'd like to hear from anyone who knows how to contact the author of the French graphics program for ADAM called "Da Vinci". It lists a 1986 copyright and the name of Christian MINIE. But, it appears that it is now PD. If we do not hear from someone regarding the program by October 1, we will add it to our PD library.

□□□ We're considering purchasing or leasing a Panasonic KX-P4450 "laser printer" for use with ADAM this winter. We'd like to write software that accesses it through the parallel interface. If any reader would consider purchasing software to drive this "state-of-the-art" printer, please let us know soon.

□□□ Don't forget about our special on PD software; this is the last month for a while. Buy 10 volumes on disk for only $39.95 ($49.95 on tape) and get another one of your choice free -- you can substitute "N&B issue sets", if you want to. We've also added the PD French version of BASIC (with numerous enhancements) to our library. And we still have the Coleco PD volumes; we don't list them any more due to limited print space.

□□□ Any subsciber who places a product order with a subtotal greater than $69.95 and renews for a year (September 1988 MUST be the last issue in your current subscription term) gets a FREE public domain volume of his/her choice. Offer EXPIRES on AUGust 31.

□□□ Strategic Software has just finished a new action game for ADAM. "Sub Raiders" retails for $26.95. Contact your favorite Strategic dealer for ordering info on this "real-time life-like submarine simulator".

□□□ For some time we've been working on a modem program for ADAM. "SwiftLINK 1.0" is now available for just $11.95 as a freeware program. This is the precursor of GoLINK. The program is not necessarily of commericial quality and may have minor bugs in file transfer. But, registered owners will get updates free (in exchange for a blank disk and 65 cents in stamps). We really need feedback on the program. It has lots of features: 30, 40, & 80 column (with OBS 80cvu) terminal modes, a phone library (parms, numbers, & names), macros, keypad usage, etc. Currently it only works with the AL modem, but we plan to support others in future releases. We believe that most users will find it to be much better than AL-I. It requires at least a 64K card (at present). The final version (commercial) will probably retail for $24.95 to those who did not order before September 30 (or free as an update to freeware testers). It is ONLY available through DEI and ADAM-Link of Utah.

LETTERS TO THE EDITOR

The following questions and comments have been culled from recently received mail. The reader's input is a reasonable facsimile of the actual correspondence. For the benefit of all readers my reply, where applicable, is generally more detailed than any written reply. Unless the reader requests differently, street addresses are omitted.

LIST PROTECTION TRICK

I found a POKE trick (SmartBASIC 1.0) that others may be interested in. It is "POKE 456, 24". This hides the program in memory. If you type "LIST" the program just RUNs itself. To restore the LIST command, "POKE 456, 24".

Bryan Payton
Elberton, GA

QUESTIONS

I have recently subscribed to your monthly newsletter and I really enjoy reading it. I do, however, have a couple of questions. For one, in the April '88 issue (on page 16) you feature a program called MultiPIX. On line 99 of that program the REMark states "load ml routines" -- what is an "ml routine" and where can I find it? Two, I would like to know if it possible to hook an Okimate 20 to the ADAM computer; and if so, how?

Rick Sovine
Decatur, IN

REPLY: An "ml" routine is a machine language (Z80) subroutine; it is POKEd into free areas of computer memory and then CALLed to execute the particular function, which generally is not available as a SmartBASIC command. Yes, you certainly can hook up an Okimate 20 to ADAM; many already have. The printer needs to have a standard Centronics parallel connection; for the OK 20, you'd need the IBM plug 'n print module. Also you'll need a parallel interface and cable to plug inside the memory console; both of these are available from OrphanWare. You can get an Okimate 20 at almost any computer supply store.

TECHNICAL CHALLENGE

EDITOR'S NOTE: Recently a parallel interface was offered for use with ADAM that has a very high degree of similarity with the OrphanWare PIA2. John Lingrel, founder of OrphanWare, poses the following as a technical challenge to the authenticity of the other board. (The other board has been discontinued from production and both OrphanWare and the other firm are now working on new interface designs.)

If either of you (the designers of the board) can provide, in writing, to Dr. Swift at his published address, correct answers to the following simple questions, I will award the Canadian rights to the PIA2 to you for FREE. I have provided the answers to Dr. Swift and have asked that he have your mailed response opened in the presence of a notary and have them compared and verified. The answers would be very obvious to a designer of an original board.

1. What is the purpose of the 7404 or 74LS04 (either is acceptable as I designed the board)?

2. What is the purpose of the 47 or 51 ohm resistor? How do you tell which is appropriate for a given board?

3. What is wrong with the decoupling capacitor near the 74LS374?

4. Why won't "your board" drive every STAR NX-1000?

I hate working with PALS (they are also more expensive), but you have forced me to do it. All new OrphanWare boards (and there will be many) will incorporate PALS as a means to stop hardware piracy. It is just unfortunate that the actions of a few are going to cause the consumer to pay more for their hardware than they would have before. I estimate that the price of an average board will increase about 40%. I have also asked Dr. Swift to print your answers (if you'd like) if you answer them at all. I doubt very seriously that you will be able to.

FIXING YOUR PRINTER
by Pastor Bob Yingling
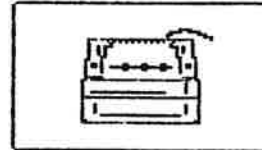
I own an ADAM computer and have added a second data drive and a 64K expansion board. I also have had occasion (by necessity) to "get inside" my computer for various reasons. The latest situation involved a problem with my printer.

I was printing church letters recently and got to the last one when the printer just seemed to go "nutso"! When I would initiate the PRINT function, the roller would index the paper about half-way out and then shut down. The screen would go through the "finish print" sequence and then return to the entry level SmartKEY headings.

Knowing that I had nothing to loose (it's broke anyway, right?), I tore into the printer. As I was unscrewing the lid I heard a piece of something rattling around inside. It turned out to be one of the contact legs of a micro-switch located under the roller's drive gear. In order for the roller to setup in the right position to begin printing, an extension (or 'tang') on the roller gear would come around and physically close the contacts on the micro-switch. When the switch contacts were closed, the roller would stop indexing and the printer would function normally.

I found the solution at a local Radio Shack store. There I purchased a "micro-switch with roller" (# 275-17 for $1.59) and one package of machine screws and nuts (# 64-3010 at $0.99 and # 64-3017 at $0.99 respectively). The only critical part of the repair was in determing the proper alignment, angle and height of the switch.

As the roller gear with tang turns clockwise, the switch must be mounted with the roller to the right and tipped slightly to the left with the roller facing into the striking tang. I found that I could easily drill through the back of the gear housing and insert the longer machine screws. The heads of the screws are not in the way of anything back there. Then I locked the screws down with nuts and ran a second nut on each screw to adjust for the height of the striking tang. After soldering the two wires to the "normally open" poles of the switch, I mounted the switch on the two matching screw studs and locked it down with two more nuts.

My alignment and height were both OK. The tang on the roller gear strikes the roller of the micro-switch on the first trip around. The switch makes instantaneous contact and (WHEW!) I'm back to printing out my important church letters.

I hope that this information will help others who've experienced that "lost" feeling when THEIR computer experiences the same symptoms.

HARDWARE DESIGN
by John R. Lingrel
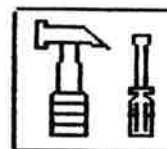
This is the second in a series of hardware articles. This month we will discuss construction of the PIA2, Parallel Printer Interface.

In order to assemble the interface, you will need the following items. I have listed sources for them.   The total cost should be in the range of $5.00 to $20.00 for the components and $6.00 for the disk based software and the blank PC board.

QTY	PART #	SOURCE
one	74LS374	JDR
one	74LS368	JDR
one	74LS138	JDR
one	7404	JDR
one	PN2222 (trns)	JDR
two	74LS32	JDR
one	IDH40 (2x40hdr)	JDR
one	47ohm .25W rstr	JDR
four	.01uf disc cpct	JDR
one	PIA2 PC BOARD	OrphanWare
one	FastPATCH	OrphanWare
one	Centronics Cbl	OrphanWare

You can reach JDR Micro Devices by calling 1-800-538-5000. There are many reputable firms that carry these parts. But, we used JDR for all our parts and have found the quality and service to be very good.

Before starting this project, you will need to be well qualified in soldering with a low wattage iron. If you are not adept at soldering, find a friend to help who has some experience. You will need about a 30 watt soldering pencil and a good quality rosin core solder. Also, you'll need a small amount of 91% isopropyl rubbing alcohol to clean the rosin from the finished board (so it won't corrode).

Lay the circuit board on the bench in front of you and determine the top side. The bottom is marked with the letters OW, P, and HE3VO.

1) Install the integretated circuits on the board as shown in figure 1 (on the next page).   Tack solder each in opposite corners.   Make sure you pay attention to the location of pin one (the notched side).

2)   Install the header plug. This usually comes as a 2 by 40 plug. You will need to cut it off at a point to have a 2 by 13 plug.

3)   Install the PN2222 transistor and the four capicitors.

4)   Install the 47 ohm resistor.

HARDWARE DESIGN continued ...

5) Verify the location of all components and solder in place. You will now want to clean the board. You can soak it in a small pan of alcohol for about 15 minutes. Use a small, still bristled brush to remove all the rosin. Now use a hair dryer to blow it dry. This finishes constructon of the board. Now refer to the documentation that comes with the PC board for installation instructions and operation. If you can't get it working, return it to OrphanWare and we will fix it for a small charge (about $5.00 plus shipping). We hope that you will enjoy this project; next month we will start on a 64K memory expander.

Here are the prices for the parts available from OrphanWare: PIA2 Kit interface is $6.00 with the disk and $9.00 with the tape, the Centronics cable is $17.00, and S/H is $3.30. We ship via UPS.

(HARDWARE DESIGN FIGURE 1)

PIA2 COMPONENT LOCATIONS
THIS IS THE COMPONENT SIDE
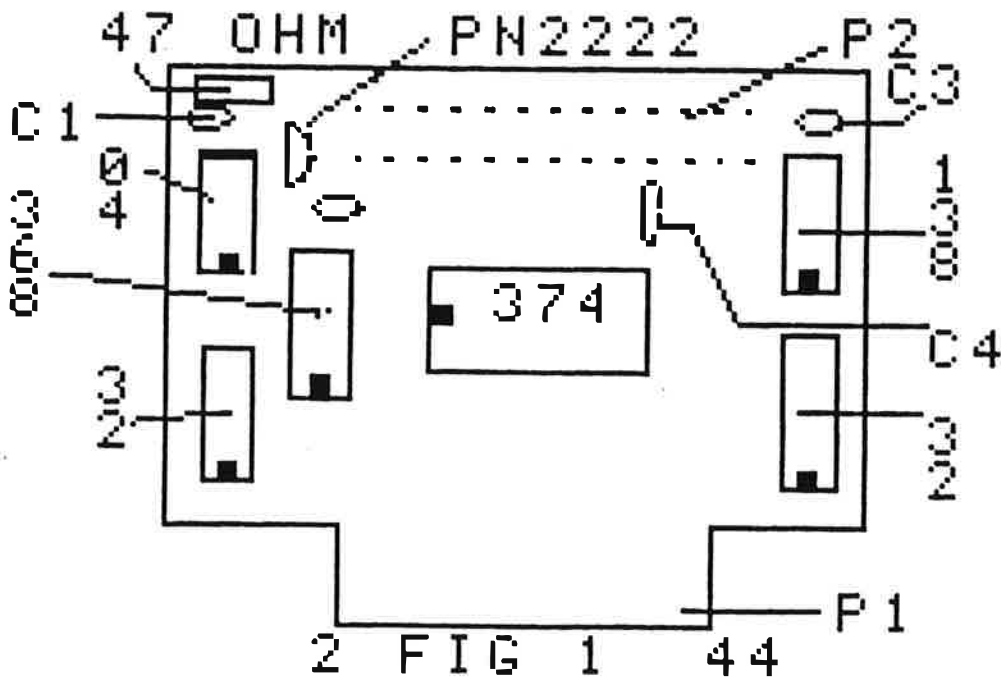
OVER THE PHONE LINES
by David E. Carmichael

A few weeks ago I had a chance to see, in action, one of the world's greatest uses of computer controlled entertainment systems. One entirely new aspect of computer telecommunications is the use of shortwave radio to exchange data. Until just a few months ago most computer hobbiests would use their local telephone switching system to connect to a local Public 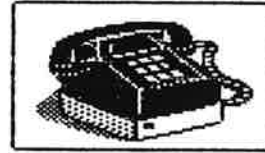Electronic Bulletin Board or use a national switching data exchange system to connect with a Nation Electronic Forum or Database. What it is that I am trying to point out is that computer telecommunications does not have to be limited to computers that are connected via a phone line with a human operator at one end and a larger computer at the other exchanging information.

Now back to where it was that I got to see this computer controlled entertainment system in operation ... it was Disney's "EPCOT" center in Kissimmee, Florida -- just south of the city of Orlando (the home of the MOAUG ADAM Group). At the main EPCOT Future World display area just about every aspect is controlled by a set of three main frame computers. You can see these computer systems in action in the "BACKSTAGE MAGIC" show which gives you a brief history of computers and in a live display of the main computer room (using electronic magic and special effects) showing you the control systems in action. There are so many details to control with precise timing that it would be impossible for humans to do.

At most every turn there were touch-sensitive video screens used in taking surveys. And computers are used to help you find your way around "EPCOT" too. There is even an area displaying current telephone communications networks and a section that explains that computer telecommunications will become part of every day life in the not too distant future. There is even an exhibit speculating what life in the twenty-first century might be like.

Now I could go on with this breif discription of EPCOT but there was a point of interest in Kissimmee that can show you just how far computers have changed in the last five years alone. This was a house called XANADU, the house of the future. XANADU was built in '83 using top of the line computers and building techniques for the time. Every part of this house was totally computer controlled from the lights to security and heating. They even showed how to use a common RS232 connected to a "BSR-HOME CONTROL" system to create a similar setup. ADAM is capable of doing this too if the software were written.

Both the EPCOT Center and XANADU illustrate how using COMPUTER TELECOM-MUNICATIONS is changing the way we live.

ASSEMBLY LANGUAGE AND CP/M 2.2
by Guy Cousineau
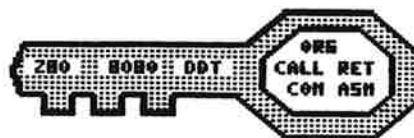
This month let's discuss program size reduction. There are several things to look for when reducing a program's size. I'll illustrate just a few.

Look for needless PUSH and POP instructions. Your first model may have needed them, but later versions may not. Two bytes here and there ad up after a while.

Look for common sequences and combine them into a subroutine. The most typical example of this is BDOS file functions. For most of them, you need to load "DE" with the FCB pointer and "C" with the function number. In addition, you may need to save a few registers. Having a subroutine that handles these CALLs for you may save considerable space. It could look like this:

```
PUSH   DE
PUSH   HL
LD     DE,FCB
CALL   5
POP    HL
POP    DE
OR     A
RET
```

The subroutine assumes taht "C" already contains the function to be used. It saves "HL" and "DE" for you even though you may not need to preserve them every time. The "OR A" at the end helps you check for most error conditions since a zero value usually indicates that the operation went well. Every time you call this subroutine you may save up to eight bytes.

Take advantage of values already in registers. Look at the following sequence:

```
LD     BC,0
LD     DE,0
```

This uses six bytes. This next one does the same thing using five bytes.

```
LD     BC,0
LD     D,B
LD     E,B
```

"XOR A" will place a zero in the accumulator, but it will also clear all the flags. If the flags are not required, this one-byte instruction is better to use than "LD A,0".

EXPLORING SMARTLOGO
by Leonard F. Adolph
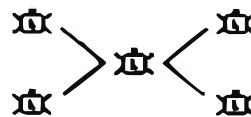
```
PR .VERSION
SMARTLOGO#311
```

This is a primitive that isn't listed in my manual, but it showed up when I used ".PRIMITIVE". I don't know if there are any other versions of SmartLOGO, but if there are it could be handy to know which one you are dealing with.

Here are two simple programs to use for looking into the workings of SmartLOGO. To use the first one, FINDBYTE, enter: FIND xx yy zz (where xx=search start address, yy=search end address, and zz=byte to search for). All entries are in decimal. The second program, FINDSERIES, works the same except that the final input is a list with any number of elements. Both programs print the addresses where the byte (or bytes) is found. If you look for primitives, keep in mind that most of them are backwards in memory and the last character has 128 added to it.

FINDBYTE

```
TO FIND :START :FINISH :WHAT
DECIDE
END
TO DECIDE
IF :START > :FINISH [STOP]
IF ( .EXAMINE :START ) = :WHAT [PR :START]
MAKE "START :START + 1
DECIDE
END
```

FINDSERIES

```
TO FIND :START :FINISH :WHAT
DECIDE
END
TO DECIDE
IF :START > :FINISH [STOP]
MAKE "TEMP :WHAT
PEEK
NEXT
DECIDE
END
TO PEEK
MAKE "LOOK .EXAMINE :START
IF :LOOK = ( FIRST :TEMP ) [AGAIN]
END
TO NEXT
MAKE "START :START + 1
END
TO AGAIN
MAKE "TEMP BUTFIRST :TEMP
IF EMPTYP :TEMP [PR 1 + :START - COUNT :WHAT MAKE "TEMP :WHAT]
NEXT
PEEK
END
```

CP/M MODEM PROGRAMS

by: Rob Friedman

EDITOR'S NOTE: Rob Friedman is the CP/M SYSOP in the ADAM section on CompuServe. This article continues where we left off last month on his opinions and observations of several of the modem programs available for use under CP/M.

IMP, by Irv Hoff, for the external modems only, is similar to Madam7 (which is based off Irv's Modem7) in commands, except you use ESC-E instead of Cntrl-E to get into command mode (like Mex). IMP is unique in that it is the only PD program that will autoselect 1K protocol for transmissions if the system is capable. If not, it will auto-switch to 128-byte blocks. IMP also has two companion programs for the phone library and the function keys. Also a "set baud rate" feature is implemented. Like Madam7, this is a very easy program to run since it has a built-in menu and very few commands. (Unlike Mex which is so chocked full of options that one needs to constantly refer to the docs or get the help file.) IMP is my prime modem program, though occasionally some BBS's won't download with it. If you have a problem downloading with IMP, try Mex instead. IMP is a big hit in the CP/M world.

Kermit is different from the programs discussed thus far. Kermit is actually designed for use between mainframes and microcomputers. It was developed at Columbia University. Kermit is not the frog; the word is Celtic for "free". The current version in use is called the generic one, because it will work on almost any system. (I think I've seen a version of Kermit setup for the ADAMlink modem, but I've never used it.) Kermit uses kermit protocol, not Xmodem, which runs a bit slower. But, it is a standard in that several mainframes use it and it will run on most systems. Of course it will DownLoad or UPload only from systems running Kermit.   (CompuServe recently implemented Kermit in addition to their own CIS-A, CIS-B, Xmodem, and ASCII (this is a non-checking mode that can be used for BASIC or text files and this is what ADAMlink 2 uses). This type of ASCII transfer is also called file capture, or Xon/Xoff. To use Kermit on an ADAM with an external modem, you must first set the I/O port by using the command "Set Port TTY". This will let Kermit work your modem. Then, use the Hayes commands for your modem, ie, ATDT 2127771221. The modem will operate and dial your number. To recieve a file, you first let the system know the name you will use on your disk. Then go into command mode, and use RECEIVE (no filename needed, you already told the system). This is an interesting program because of its usage to get progams from sources that don't use Xmodem protocol. It's a nice program (after setting the port), but it is slow.

CONTROLLING THE MODEM
by Alan Neeley

Have you ever wished you knew how the ADAMlink phone modem worked? This article is for those of you who have at least some knowledge of BASIC programming and a need to communicate with the internal modem (either out of general curiosity, or out of the need to create or modify a telecommunications program). It will be continued next month.

For now, we need to make sure that all readers understand some common computer terminology that I will be using in this article. The following introductory definitions should make the technical aspects easier to understand.

To keep things simple, these workshops will be written in the perspective of a SmartBASIC programmer. This means that all numbers will be displayed in decimal form -- the system that everyone is familiar with. However, the decimal values can easily be converted to hex or binary.

PORT

You will find that I use the word PORT quite a bit throughout the article. What is a port in computer terms? Is it like a port for a boat or a ship? Or, maybe like a portal? Well sorta ... a port (for computer purposes) is a passageway through which DATA (or information) can be sent to and from various hardware devices (computer peripherals) you may have connected to the system; virtually every peripheral for ADAM (such as a disk drive, memory expander, or phone modem) have one or more ports that are used to communicate with each of these particular devices. Every port is assigned a specific value so that the computer (and its programmer) can communicate only through the desired port. ADAM has 256 ports but many of them are used by various devices.

BUFFER

The word BUFFER refers to an area in memory that is reserved for temporarily storing information, usually before it is moved somewhere else. I like to think of a buffer as an entrance or an exit to the port.

ADDRESS

You will also see the word ADDRESS used frequently. This word can be defined in computer terms in much the same way as it is defined in everyday use. It refers to a particular place where DATA is located within memory. The address is the number associated with a BYTE of memory in the same way that a street address is associated with each house on that street. The addresses start at "0" and continue in sequence through "65535". The largest value that can be stored at an address is 255.

LOW/HIGH BYTE NOTATION

The reader should also know what is meant by the terms HIGH BYTE and LOW BYTE addressing. To be able to access all locations of the computer's memory when using machine code routines, the programmer must split the address (memory location) into two values. The LOW BYTE value counts from "0" to "255" and when it reaches "255" it goes back to "0" and adds "1" to the HIGH BYTE value. This continues until the address value is reached. Thus the HIGH BYTE value tells you how many times the LOW BYTE value has counted from "0" to "255". In memory the LOW BYTE value is usually first with the HIGH BYTE value following directly thereafter. To convert the two values back to the decimal address, multiply the HIGH BYTE value by "256" and add the LOW BYTE value to that total.

MACHINE LANGUAGE ROUTINES

To transmit DATA through a port in BASIC the programmer must make use of a couple of simple machine language routines. These routines can be placed in a reserved area of memory with the POKE command and executed with the CALL command. You don't need to fully understand how these routines work in order to use them in a BASIC program.

PROGRAM EXPLANATIONS
by Solomon Swift

WE ♥ ADAM

EZalarm

A few weeks ago, Jose Dieppa asked me if there was a program that uses the EVE SS/CC as an alarm clock. I didn't know of one and thus began the work "EZalarm", LISTed on pages 16 thru 18; actually he had a more sophisticated program in mind, but this one serves the basic purpose and reveals a little bit about how to access the EVE Clock (and OrphanWare Clock).

Line numbers 10 thru 720 setup the variables and create the required machine code routines. One aspect of EVE's software that I didn't like was that their Z80 routines use so much memory and resisted relocation. My two routines (read clock: 300-350 and set clock: 500-540) are not address specific; you can put them at any reserved area in RAM. The access table uses 13 bytes for clock data. I selected address 54272 (0,212) to start the table since you can't set the clock and read the catalog at the same time.

You have two choices for an alarm preference. By default the program sounds a chime every second at alarm time. You can also have ADAM speak a "WAKE UP" message. For the chime, the last statement on line # 4070 should be "GOSUB 6000". For the "spoken" message (with the EVE or OrphanWare speech synthesizer), make that statement "GOSUB 7000". You can set your own message by changing the allophone data on line numbers 600 thru 690. Just be CERTAIN to end the data with "255,-1". Also, the alarm will only work when the clock is in display mode.

Line numbers 1000 thru 1070 present the opening menu. Line numbers 2000 thur 2260 let you set the clock; no provision is made for military time -- line numbers 3000 thru 3120 allow you to set the time for the alarm. When the program is first RUN, the alarm is off.

Line numbers 4000 thru 4250 constitute the clock display mode with a check for the alarm time; the alarm will sound until you turn it off or until the hour changes. If you set it for 6:58, it will sound for two minutes. If you set it for 6:30, it will sound for 30 minutes.

Double Column CATALOG

The program at the bottom of page 18 patches the BASIC CATALOG command so that it displays filenames in a two column format on the TEXT screen. The file size is omitted. Line numbers 400 and 410 explain how to revert to the standard CATALOG display. This could add a nice touch to your programs.   (It is incompatible with Intel-BEST 3.3.)

ANOTHER SmartTUNES SONG

The SmartTUNES song on page 19 plays "Mary Had A Little Lamb". Be sure to RUN the SmartTUNES music driver from the November '87 issue first.

PowerPAINT 'arrow' PATCH

Here is yet another patch to the fine PowerPAINT program. This one, suggested by Tony Patterson, changes the foreground stylus from a diagonal arrow to a "single dot pointed to by a diagonal arrow". This makes it a little easier for detailed graphics work. Try it; you'll see what a difference it makes. I use it on my personal PowerPAINT.

More PowerPAINT patches are on the way. Next month I'll have one that lets you set the SmartKEY text and Roman numeral colors, the file folder color, and the file arrow color. This could make the screen a little easier to read if you've got poor video. Another upcoming patch is to add white as a palette color. And still another will be a patch to allow for 10 cells with at least a 128K memory card. This one was first suggested by Terry Fowler of ADAM'S HOUSE.

Use these patches ONLY on a BACKUP of PowerPAINT! Any typo when entering the program could DESTROY PowerPAINT; don't take chances with the original medium. USE A BACKUP and enjoy the change.

```
10 REM EZalarm (requires EVE SS/CC or OrphanWare CLOCK)
11 REM a freeware contribution by DIGITAL EXPRESS
12 REM presented in Nibbles & Bits AUGust 1988
13 REM do NOT remove these REMark statements
14 REM program concept by Jose Dieppa
100 LOMEM :28000: POKE 16149, 255: POKE 16150, 255
110 FOR x = 0 TO 6: READ da$(x): NEXT: h9% = -255
120 DATA Sun,Mon,Tues,Wendes,Thurs,Fri,Satur
130 DIM mn$(12): FOR x = 1 TO 12: READ mn$(x): NEXT
140 DATA January,February,March,April,May,June,July,August
150 DATA September,October,November,December
200 REM set time routine
210 DATA 33,0,212,62,128,211,75,6,0,62,16,211,74
220 DATA 17,10,0,27,122,179,32,251,120,211,73
230 DATA 126,211,72,35,62,80,211,74,4,62,128,211,74
240 DATA 62,13,184,32,223,201
250 FOR x = 27600 TO 27642: READ mc: POKE x, mc: NEXT
300 REM read time routine
310 DATA 33,0,212,6,0,62,145,211,75,62,16,211,74
320 DATA 17,12,0,27,122,179,32,251,62,48,211,74
330 DATA 126,211,73,0,0,219,72,230,15,119,35,4
340 DATA 62,13,184,32,235,62,128,211,74,201
350 FOR x = 27700 TO 27746: READ mc: POKE x, mc: NEXT
400 REM sound OUT
410 DATA 62,0,211,224,201
420 FOR x = 27650 TO 27654: READ mc: POKE x, mc: NEXT
500 REM speech routine
510 DATA 62,000,245,219,75,254,75,32,2,241,201
520 DATA 62,129,211,75,219,74,203,71,40,250,241
530 DATA 211,72,246,128,211,73,175,211,73,201
540 FOR x = 27750 TO 27781: READ mc: POKE x, mc: NEXT
598 REM "Wake up.  It's time to get out of bed."
599 REM change "gosub 6000" to "gosub 7000" on line # 4070
600 DATA 3,46,20,41,3,15,1,9,2,4,12,17,43,3
610 DATA 13,6,16,3,13,22,3,36,7,13,3,32,13,3
620 DATA 24,40,3,63,7,33,4,4
690 DATA 255,-1
700 st = 27800
710 READ sp: IF sp = -1 GOTO 1000
720 POKE st, sp: st = st+1: GOTO 710
1000 POKE 17059, 23: POKE 17115, 23: POKE 17126, 246: TEXT
1010 INVERSE: PRINT " EZalarm": NORMAL: POKE 16953, 95
1020 VTAB 4: PRINT " 1 = set time/date"
1030 PRINT " 2 = set alarm": PRINT " 3 = begin clock display"
1040 PRINT " 4 = exit program"
1050 GET m1$: m1% = VAL(m1$): IF m1$ = CHR$(27) GOTO 1100
1060 IF m1% < 1 OR m1% > 4 GOTO 1050
1070 ON m1% GOTO 2000, 3000, 4000, 1100
1100 TEXT: PRINT " end of program.": END
```
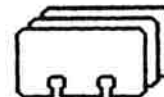
EZalarm LIST continued ...

```
2000 TEXT: INPUT " Enter year (0-99): "; yr$
2010 yr% = VAL(yr$): IF yr% < 0 OR yr% > 99 GOTO 2000
2020 VTAB 3: INPUT " Enter month (1-12): "; mn$
2030 mn% = VAL(mn$): IF mn% < 1 OR mn% > 12 GOTO 2020
2040 VTAB 5: INPUT " Enter date (1-31): "; dt$
2050 dt% = VAL(dt$): IF dt% < 1 OR dt% > 31 GOTO 2040
2060 VTAB 7: INPUT " Enter day (0-6, 0=SUN): "; dy$
2070 dy% = VAL(dy$): IF dy% < 0 OR dy% > 6 GOTO 2060
2080 VTAB 9: INPUT " Enter hour (1-12): "; hr$
2090 hr% = VAL(hr$): IF hr% < 1 OR hr% > 12 GOTO 2080
2100 VTAB 11: INPUT " Enter minute (0-59): "; mi$
2110 mi% = VAL(mi$): IF mi% < 0 OR mi% > 59 GOTO 2100
2120 VTAB 13: INPUT " 0=am and 1=pm: "; mm$
2130 mm% = VAL(mm$): IF mm% < 0 OR mm% > 1 GOTO 2120
2200 IF mm% = 1 THEN  hr% = hr%+40
2210 du% = mi%: ad = 54274: GOSUB 5000
2220 du% = hr%: ad = ad+2: GOSUB 5000
2230 POKE 54278, dy%: du% = dt%: ad = ad+3: GOSUB 5000
2240 du% = mn%: ad = ad+2: GOSUB 5000
2250 du% = yr%: ad = ad+2: GOSUB 5000
2260 CALL 27600: CALL 27700: GOTO 1000
3000 GOSUB 3100: TEXT: INPUT " Enter alarm hour (1-12): "; h9$
3010 h9% = VAL(h9$): IF h9% < 1 OR h9% > 12 GOTO 3000
3020 VTAB 3: INPUT " Enter alarm min (0-59): "; m9$
3030 m9% = VAL(m9$): IF m9% < 0 OR m9% > 59 GOTO 3020
3040 VTAB 5: INPUT " 0=am and 1=pm: "; p9$
3050 p9% = VAL(p9$): IF p9% < 0 OR p9% > 1 GOTO 3040
3060 GOTO 1000
3100 TEXT: PRINT "Enable alarm (y or n):"
3110 GET k$: IF k$ = "y" OR k$ = "Y" THEN  RETURN
3120 POP: h9% = -255: GOTO 1000
4000 TEXT: VTAB 4: INVERSE: HTAB 2: PRINT " DATE:   "
4010 PRINT: HTAB 2: PRINT " DAY:    ": PRINT
4020 HTAB 2: PRINT " TIME:   ": PRINT
4025 HTAB 2: PRINT " ALARM: ": NORMAL
4030 VTAB 20: PRINT "- tap <ESCAPE> for the menu -"
4035 IF h9% = -255 THEN  VTAB 10: HTAB 11: PRINT "OFF": GOTO 4060
4040 VTAB 10: HTAB 11: IF h9% < 10 THEN  PRINT "0";
4045 PRINT h9%; ":"; : IF m9% < 10 THEN  PRINT "0";
4050 PRINT m9%; "        "; : IF p9% = 1 THEN  PRINT "pm"
4055 IF p9% = 0 THEN  PRINT "am"
4060 POKE 64885, 0: POKE 16953, 32: GOTO 4100
4065 ON h9% = -255 GOTO 4090
4070 IF mn% >= m9% AND h9% = hr% AND p9% = pm THEN  GOSUB 6000
4090 IF PEEK(64885) = 27 GOTO 1000
4100 CALL 27700: yr% = PEEK(54283)+10*PEEK(54284)
4110 mo% = PEEK(54281)+10*PEEK(54282)
4120 dt% = PEEK(54279)+10*PEEK(54280)
4130 hr% = PEEK(54276)+10*PEEK(54277): pm = 0
4132 IF PEEK(54277) >= 4 THEN  hr% = hr%-40: pm = 1
4140 mn% = PEEK(54274)+10*PEEK(54275)
4150 sc% = PEEK(54272)+10*PEEK(54273)
```

EZalarm LIST continued ...

```
4200 VTAB 4: HTAB 11: PRINT dt%; " "; mn$(mo%); " "; yr%+1900
4210 VTAB 6: HTAB 11: PRINT da$(PEEK(54278)); "day"
4220 VTAB 8: HTAB 11: IF hr% < 10 THEN  PRINT "0";
4225 PRINT hr%; ":";
4230 IF mn% < 10 THEN  PRINT "0";
4235 PRINT mn%; ":";
4240 IF sc% < 10 THEN  PRINT "0";
4245 PRINT sc%; "    "; : IF pm = 1 THEN  PRINT "pm": GOTO 4065
4250 IF pm = 0 THEN  PRINT "am": GOTO 4065
5000 b2% = du%/10: b1% = du%-10*b2%: POKE ad, b1%: POKE ad+1, b2%
5010 RETURN
6000 FOR x = 0 TO 15: POKE 27651, 128: CALL 27650
6010 POKE 27651, 13: CALL 27650: POKE 27651, 144+x: CALL 27650
6020 POKE 27651, 162: CALL 27650: POKE 27651, 11: CALL 27650
6030 POKE 27651, 176+x: CALL 27650
6040 FOR de = 1 TO 20: NEXT: NEXT: CALL 64851: RETURN
7000 FOR x = 27800 TO 28000: pk = PEEK(x)
7010 IF pk = 255 THEN  RETURN
7020 POKE 27751, pk: CALL 27750: NEXT: RETURN
```

```
10 REM double column CATALOG patch
11 REM a freeware contribution by DIGITAL EXPRESS
12 REM presented in Nibbles & Bits AUGust 1988
13 REM Do NOT remove these four REMarks
100 POKE 16149, 255: POKE 16150, 255
200 DATA 205,152,83,33,245,65,205,165,83,235,43,126,205,218,46
210 DATA 62,32,119,205,218,46,33,16,66,6,11,126,35,205,218,46,16,249
220 DATA 58,15,66,183,40,14,6,2,62,32,205,218,46,16,249,33,15,66,52,201
230 DATA 62,13,205,218,46,33,15,66,53,201,-1
300 st = 65420: tt = 0
310 READ mc: IF mc = -1 GOTO 330
320 POKE st, mc: st = st+1: tt = tt+mc: GOTO 310
330 ON st = 65483 AND tt = 6309 GOTO 500
340 PRINT: PRINT " data entry error!!!": END
400 REM to return to the standard BASIC catalog:
410 REM poke 21259,104:poke 21260,83
500 DATA 205,140,255
510 FOR x = 21258 TO 21260: READ mc: POKE x, mc: NEXT
```

```
 100 LOMEM :32000: be = 29000
 110 PRINT " one moment please ...": PRINT
1000 REM "Mary Had A Little Lamb"
1010 REM must load SmartTUNES player routine first
1020 DATA E5E6E48,D5D6D48,C5C6C48
1030 DATA D5D6D48,E5E6E48,XYZ1
1040 DATA E5E6E48,XYZ1,E5E6E416
1050 DATA D5D6D48,XYZ1,D5D6D48,XYZ1
1060 DATA D5D6D416,E5E6E48,85G6848,XYZ1
1070 DATA 8566G416,E5E6E48,D5D6D48
1080 DATA C5C6C416,D5D6D48,E5E6E48,XYZ1
1090 DATA E5E6E48,XYZ1,E5E6E48,XYZ1
1100 DATA E5E6E48,D5D6D48,XYZ1
1110 DATA D5D6D48,E5E6E48,D5D6D48
1120 DATA C5C6C416
2599 DATA W
2900 READ nt$: IF nt$ = "W" THEN  GOSUB 3000: GOTO 4000
2910 GOSUB 3000: GOTO 2900
3000 FOR x = 1 TO LEN(nt$): ak = ASC(MID$(nt$, x, 1))
3010 IF ak > 64 THEN  POKE be, ak: GOTO 3100
3015 pk = PEEK(be-1): IF pk = 88 OR pk = 89 OR pk = 90 GOTO 3030
3020 IF PEEK(be-1) > 64 GOTO 3200
3030 IF x = LEN(nt$) GOTO 3200
3040 a1 = VAL(MID$(nt$, x, 1)): a2 = VAL(RIGHT$(nt$, 1))
3050 POKE be, a1*10+a2: x = x+1: GOTO 3100
3100 be = be+1: NEXT x: RETURN
3200 POKE be, VAL(MID$(nt$, x, 1)): GOTO 3100
4000 tempo = 235: volume = 15: pointer = 29000: offset = 2
4010 POKE 27946, offset: REM (39,109)
4020 POKE 27792, tempo: REM (144,108)
4030 POKE 27793, volume: REM (145,108)
4040 POKE 27795, pointer/256: REM (147,108)
4050 POKE 27794, pointer-PEEK(27795)*256: REM (146,108)
4100 IF PEEK(27800) <> 229 GOTO 4200
4110 IF PEEK(28000) <> 195 GOTO 4200
4120 IF PEEK(28110) <> 108 GOTO 4200
4130 GOTO 5000
4200 PRINT: PRINT " ERROR!!!  SmartTUNES"
4210 PRINT " routine not detected.": END
5000 CALL 27800: END
```

```
10 REM a public domain donation by DIGITAL EXPRESS
11 REM presented in Nibbles & Bits AUGust, 1988
12 REM PowerPAINT patch
14 REM Allows you to design the "draw foreground" arrow.
16 REM (suggestion by Tony Patterson)
17 REM Sprite data on line #'s 450-454
100 LOMEM :29000
110 DATA 62,4,1,0,0,17,52,0,33,0,108,205,243,252,50,255,107,201
120 FOR x = 27601 TO 27618: READ mc: POKE x, mc: NEXT
130 dv$(1) = "TAPE ONE": dv$(2) = "DISK ONE"
200 TEXT: PRINT: PRINT " This program allows you to"
210 PRINT " patch your own cursor for the"
220 PRINT " 'draw foreground' cursor in"
230 PRINT " PowerPAINT: ONLY on a BACKUP!": VTAB 16
300 PRINT " Which drive for PowerPAINT?": PRINT
310 PRINT " 1 = tape one": PRINT " 2 = disk one"
320 GET k$: k% = VAL(k$): IF k% < 1 OR k% > 2 GOTO 350
330 dv% = 2^(4-k%): GOTO 400
350 TEXT: PRINT " end of program.": END
400 HOME: PRINT " insert your PowerPAINT"
410 PRINT " BACKUP into "; dv$(k%); " and"
420 PRINT " press <RETURN> ..."
430 GET go$: IF go$ <> CHR$(13) GOTO 350
450 REM active sprite data
452 DATA 128,0,0,0,15,12,10,9,8,0,0,0,0,0,0,0
454 DATA 0,0,0,0,128,0,0,0,128,64,32,0,0,0,0,0
460 REM default sprite data
462 REM 248,192,160,144,136,4,2,1,0,0,0,0,0,0,0,0
464 REM 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
500 HOME: PRINT " modifying ...": CALL 27601
510 IF PEEK(27647) = 128 GOTO 530
520 PRINT " read error on block 52.": END
530 FOR x = 0 TO 31: READ sd: POKE 108*256+x, sd: NEXT
560 POKE 27613, 246: CALL 27601
670 IF PEEK(27647) = 0 GOTO 700
680 PRINT " write error on block 52.": END
700 HOME: PRINT " Foreground cursor changed.": END
```

ADVANCED PROGRAMMING
by Solomon Swift

SECRETS
REVEALED
HEREIN...
......

LESSON 3

This continues my series on learning how to program in Z80 machine code. I'll be the first to admit that I am no expert at programming. It's just a hobby that grew into a full-time business. These articles are simply my attempt to pass along some of what I've learned over the past couple of years. Hopefully, it will make Z80 programming an easier undertaking for those interested.

GETTING MOTIVATED

Just about everyone I talk with about ADAM is interested in programming in machine code. Z80 programs are fast, powerful, have more free memory, and the only real limitation is creativity. But how do you go about getting started?

First off, let me say that I didn't go from a computer idiot to one of the most prolific software writers for ADAM (in just over two years) by procrastiniting. Yes, "putting it off" is what holds most of us back from achieving goals and realizing dreams. We all have demands on our time ... work, family, social events, and other hobbies (eating, sleeping, and sundry other fun things too). The most common culprit robbing our time is TV. Exchange 10 hours of TV drivel a week for earnest programming and you'll see tremendous changes in your skill level.

In the beginning, I must admit, Z80 can be overwhelming. Routines won't always work the way you want them to. Some may even crash. Just keep at it; don't give up. Along the way you'll reach many plateaus of understanding. Within in time you'll have your system *sitting up and begging for more!*

I got my first disk drive solely because I got tired of rebooting BASIC from tape every time one of my routines crashed the system. I am the undesputed "crash king". It doesn't happen very often these days because I understand ADAM and its CPU better. Don't worry if something you try doesn't work out (save your work FREQUENTLY just in case of crashes), just try it again. Experiment, try using the EOS routines, read anything that you can make time for about the Z80. There's nothing quite like the 'sense of accomplishment' when you get a *brainchild* to work.

IN PERSPECTIVE

I started learning Z80 from BASIC. In my opinion, this is the easiest way because you get immediate feedback on routines. And, this encourages creating a library of routines. Even the most sophisticated programs are nothing more than a group of interactive routines each performing specified tasks.

Most books on ML programming start off with a concentration on the hex and binary number systems. Then they try to get the reader to grasp the internal workings of the computer. I don't believe this method is the best approach. (One doesn't need to understand the fundamentals of an internal combustion engine in order to learn how to drive a car.) I believe it's better to start in BASIC or some other high level language in order to get an idea of 'how to program' and 'what a computer can do'.

WHERE DO THE NUMBERS COME FROM?

One of the most common questions is 'where do the numbers come from?' ... and 'what do they mean?' SmartBASIC has just over 100 commands; the Z80 has over seven hundred. The 'numbers' are the Z80 commands. Some of them are parameters for the commands in much the same manner as "15" is a parameter for "HCOLOR=15".

A Z80 program has no line numbers; it is executed in address sequence, one byte after another. You can branch execution with jumps (JP) or calls (CALL). A jump is about the same as the BASIC GOTO command. A call is roughly equivalent to the BASIC GOSUB command. Two of the more common Z80 codes for beginners are "205" and "201"; "205" is an unconditional CALL. The next two bytes after the "205" specify the address that the subroutine starts at. An unconditional CALL is like "GOSUB 1000" (but don't confuse BASIC line numbers with RAM addresses). A conditional CALL is like "IF x=1 then GOSUB 1000". The "201" is an unconditional RETurn from a subroutine; this works in the same manner as RETURN does in BASIC. A conditional RETurn would be like "IF x=2 then RETURN", otherwise the subroutine continues performing functions byte after byte.

The Z80 numbers are put in memory by POKE statements from BASIC. Normally, I assemble the numbers in DATA statements and then have the program POKE them into memory. You can then CALL (BASIC command) the routine in immediate mode or from the BASIC program.

SCREEN COLOR ROUTINE

Last month, question #10 challenged you to make the screen color routine one or two bytes shorter. The easy change was to combine the "LD B,nn" and "LD C,nn" into "LD BC,nnnn" on line 120. The improved line should look like this:

120 DATA 1,12,7,205,32,253

Be sure to shorten the number of addresses to POKE (line #160) to adjust for the smaller routine. The other trick involved PUSHing and POPing the DE register pair since it uses the same value for each CALL. We'll discuss PUSH and POP in a later article.

COMPARING TO BASIC

You'll note that I've started making more comparisons between Z80 and BASIC. Here's another example. Suppose we want to take the value in an address (let's say 65535), add one to it and then put it back. Here's one way to do it in BASIC.

POKE 65535, PEEK(65535)+1

In Z80 ...

58,255,255,60,50,255,255,201

more efficient Z80 ...

33,255,255,52,201

The first Z80 routine LoaDs the value at 65535 into the accumulator. The "60" means "INC A" (add one to the value in the accumulator). Then it puts the new value in "A" back into 65535.

The second one LoaDs the HL pair with address 65535. The "52" means "INC (HL)" (add one to the address pointed to by the HL pair).

As you'll note, Z80 can use many numbers to perform a task. Yet, it is still faster and uses less memory than the equivalent routine in BASIC.

This month's PR is a little more challenging than the previous ones. The disassemblies will require some work on your part. Each of these codes were covered in at least one of the first three articles. You may also want to refer to our "EZ REFERENCE Guides" for more help.

PROGRESS REPORT #3

Be sure to send your answers along with a COPY and an SASE. Don't just answer verbally. Even if the answers seem too simple (or too complicated) write them down and send them in. This reinforces the information for you and it gives me the opportunity to help with any problems.

1. Generally speaking, which is faster Z80 or BASIC?

2. Is practice and experimentation important to learning to program in machine code?

3. (TRUE or FALSE) You should NEVER use routines in machine code programs.

4. What is the Z80 code for an unconditional CALL?

5. What is the Z80 code for an unconditional RETurn?

6. Does a 'conditional' RETurn or CALL mean that some condition must be met for the command to execute?

7. Does an 'unconditional' RETurn or CALL mean that some condition must be met for the command to execute?

8. Is it the PEEK or the POKE command that lets you put Z80 routines in memory from BASIC?

9. Disassemble (give the mnemonics for) the following Z80 routine:

    62,4,1,1,0,17,160,0,
    33,120,255,205,189,252,201

10. Explain in detail what the previous routine does.

11. Disassemble (give the mnemonics for) the following Z80 routine:

    1,4,7,205,32,253,201

12. Explain in detail what the previous routine does.

PRODUCT REVIEWS
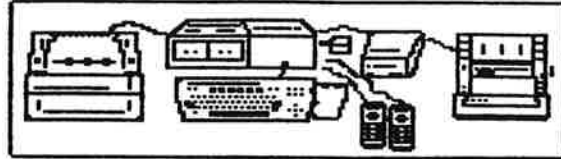
REVIEW OF:
HACKER'S HELPER
PREPARATORY TEXT

- by John Harris -

This new book by Mel Ostler is aimed at helping the computer novice go from knowing nothing about the inside workings of the system to being able to understand the more advanced aspects of programming, such as those presented in his other book, *Hacker's Helper (volume I)*. The book provides a means for easy transition into machine language programming.

Here's how Mel explains the book. "When I first received the suggestion that I write a book to bring these people up to their desired level of understanding, I thought that surely with all of the books that have been written, that any one of several would suffice. However, upon searching for one to recommend, I did not find any. The books with the most appealing titles tend to be written with the assumption that the reader already has an understanding of what terms like 'operating system', 'ROM', and 'binary' mean. It seems that most authors forget what it was like back when we didn't understand the very common terms which we now toss around as if they were learned in the cradle."

The 10 chapter headings indicate the scope of coverage: All About Numbers, The Binary Number System, The Hexadecimal Number System, Binary to Hex Conversion, Hex to Binary Conversion, All About ASCII, The Memory Systems, The Microprocessor, Mnemonics, and Assemblies and Dissassemblies.

"A HACKER'S HELPER PREPARATORY TEXT" contains 74 standard size pages. It's available postpaid for $15 from Mel Ostler   7641 Raasaf Boulevard   Las Cruces, NM 88005.

REVIEW OF: OrphanWare 80 CVU

- by Solomon Swift -

For a long time, I've stayed away from CP/M (for the most part) because the screens were just too hard to read. Just recently I got the OrphanWare 80 column video unit so that I could get more use out of this nearly universal operating system. It works; it works well. The difference it makes in CP/M usage has to be seen to be believed. You do need an 80 column monitor to use the board; an ordinary TV just can't support this high resolution. You can get a monochrome monitor for as little as 50 bucks at electronics surplus stores.

In fact, I like the 80 column capability so much that I wrote SwiftBASIC 80 for use with it. And you'll be seeing more DIGITAL EXPRESS software titles which support this fine addition to ADAM.

It plugs into the port on the right side of the console. Inside the unit are three sets of DIP switches that let you select from various modes of operation including four terminal emulations: Adds, Beehive, LSI ADM-3, and Heath H-19. You can also select any one of four base port numbers for accessing the unit (in case you've got other serial devices connected to your system).

Contact OrphanWare for the latest price. See their address and phone number in the ADAM ACCESS advertisement of this issue.

PRODUCT: PowerPAINT
MANUFACTURER: Digital Express
MEDIA TYPE: data pack/disk
GRAPHICS/SOUND/DESIGN: 99/90/99
INSTRUCTIONS: 99
USEFULNESS vs. PRICE: 99
RECOMMENDATION: HIGHLY RECOMMENDED
PRICE: $44.95/$34.95 (SDP)
REVIEWER: D.L. Decker

PowerPAINT has to be DIGITAL EXPRESS' finest commercial software creation to
date. Totally SmartKEY driven, PowerPAINT is written entirely in Z80 machine
code to make program execution as fast as the COLECO programs.

While loading the program, a colorful screen appears showing the ADAM system
and your individual system's status, ie, how many data drives, disk drives,
and printers you have installed on your system. The primary menu controls
such functions as the MASTER CONTROLS (border color, print codes, SmartKEY
label lower & upper case preferences, reset ADAMnet [to install a disk drive
which wasn't on when the system was turned on]), GLOBAL ART COLOR (color
changes for the background and foreground screens), POLYGONS (circles,
rectangles, triangles, clip art [from CLIPPER by DEI], and sprite art [from
SpritePOWER by DEI]), PAINT GRAPHICS (use of specialized paint brushes to
paint textured surfaces), DRAW BACKGROUND (a background drawing mode which
helps overcome ADAM's color bleeding), and DRAW FOREGROUND (the normal
drawing mode). The MOVE/COPY command key allows the user to move, copy, or
erase picture sections. The STORE/GET command key allows the user to access
media (DP, disk, or RAMdrive [such as OrphanWare's 128K memory card]) to store
and get paintings, clip art, sprites, brushes and fonts. As in SmartWRITER,
the CLEAR key accesses the CLEAR SCREEN options for PowerPAINT. The VCR BLANK
command allows ADAM owners with VCR's to create their own VHS tape library
screens. The PRINT key accesses the scores of print options for a dot matrix
printer. Now that the basic commands for PowerPAINT have been presented, I'll
discuss some of the key points which make PowerPAINT the obvious choice for
those in the market for a paint program

As with DEI's earlier painting utility, ShowOFF I, painting is accomplished
quickly. Unlike other commercial paint programs for ADAM, PowerPAINT's brush
paints graphics in milliseconds. Movement of the brush is equally as quick --
in fact, the brush can cross the full screen in under 15 seconds! Color
selection for foreground, background, and text modes is controlled by
SmartKEYS and the cursor keys via movement through a color chart showing all
of ADAM's possible hues. As with all DIGITAL EXPRESS commercial software,
PowerPAINT is compatible with a host of other DEI programs. Special fonts
such as BOLDFACE, SCRIPT, and others (from FontPOWER by DEI) make text
additions more ornate than had the standard ADAM font set been the only choice
of the user. Clip art, the standard of desktop publishers in the 16-bit
machine world, can be easily integrated into PowerPAINT (from CLIPPER by DEI)
to give a professional artist's flair to your paintings. Sprite art (from
SpritePOWER by DEI) gives the PowerPAINT program more excellent graphics
capabilities! To top off the list of compatibility with other software
programs, Dr. Swift and crew have made PowerPAINT totally compatible with
ShowOFF I files. Hence, PowerPAINT has one of the largest public domain
graphics libraries of any computer painting utility!!

Due to its creative use of fonts, clip art, sprite art, and its incorporation
of SmartKEYS (with key sounds), command keys, and command menus, PowerPAINT
is the most comprehensive painting utility ever developed for ADAM. In
addition, its support of the Epson/IBM compatible printers, "big RAMboards",
160K, 320K, and 720K disk drive formats makes PowerPAINT able to do what many
other software titles cannot do -- continue to grow as your ADAM system grows!

ORPHANWARE
5665 Myers Road
Akron, OH 44319

We accept VISA, MASTER CARD, CODs and even Cash. Call 216 882 4720

PIA2 Centronics Interface $32.95
Allows conncetion of a high speed dot
matrix printer to your ADAM. regularly
sells for 37.95. Add $17.00 for the printer
cable and $3.00 for tape software.

MX64 Memory Expander $44.95
Expand the ADAM to 144K of memory. This
is vey useful in ADAMCLALC, SMART-
WRITER and CP/M.   Limited Quantities

MX256 Memory Expander (OK memory)
We sell this without memory chips since the
prices of memory chips have been on an up
going elevator for a year now. You can add
pairs of memory chips as your budget will
allow. Requires the PIA2 or A2 addresser
        $45.00
        $70.00 with PIA2
        $60.00 with A2 Addresser
        Add $17.00 for printer cable
        Add $ 3.00 for tape software

320 disk drive conversion $115.00
720 disk drive conversion $155.00
You must send us a working Coleco disk
drive for the conversion. We will return the
drive in the specified form. If your drive is
broken, add $35.00 for repairs prior to
conversion. All conversion work is
warranted for a period of 1 year. Please
ship the drive to us via UPS. Add $8.80 for
Shipping handling and insurance

AVATEX 1200 or 2400 modems
1200e with serial port $149.95
2400 with serial port $239.95
Includes 3 different software packages (all
are PD) and all cables you need to connect to
the ADAM. These modems will work with
outher computers. if you upgrade at a later
date. We will provide PD software for any
computer you choose. Add $6.00 for ship-
ping an dhandling.

You must include a copy of this add with
your order. Thank you

NEW PRODUCTS

NEW COMMERCIAL SOFTWARE

SpeedyWRITE 1.0: Simply the most advanced word processor ever developed specifically for ADAM -- written in fast Z80 code. More than 100 fetures including 40 column screen, all screen colors, underline, bold, super & subscript, split screen, line justification, keyboard macros, configuration options and a full supply of file handling utilities, plus lots more. $29.95 on disk or data pack. (WHITE COMPANY)

SpeedyWRITE 2.0: All of the above plus: INIT support for any disk drive size, ability to edit two files simultaneously, pocket database, already setup for dot matrix or ADAM printer, built-in ramdisk (10K for standard ADAM and 64K with memory expander). Just $39.95 on disk or data pack.

PICTURE 1.2: great graphics program; move/copy; lines, circles, ellipses, magnify, no printing (but can easily be converted for ShowOFF I or PowerPAINT). Full screen or standard HGR screen drawing. Only $9.95 on disk or data pack. (TLB SOFTWARE)

PowerPRINTS: 15 full screen pictures for use with PowerPAINT; most designed by professional artists just for ADAM. $11.95 on disk or data pack. (WIZARD'S LAIR)

CLIP ART (1 & 2): Each volume has more than 40 clip art pictures for use with CLIPPER, PowerPAINT, or GoWRITER. Most are designed by the two commercial artists at WIZARD'S LAIR. $11.95 each on disk or data pack.

SwiftDISK: Fools the operating system into believing that the super fast ramdisk is a second tape drive. Great for SmartWRITER, ADAMcalc, SmartBASIC, SmartLOGO, and many others. Requires MegaDISK 1.0 and at least a 64K card (works best with 128K or larger card). $9.95 on disk or data pack. (DIGITAL EXPRESS).

PaintAIDE: Allows you to customize some aspects of PowerPAINT and fixes the minor bugs with the early versions. Let's you preset the SPECIAL typefaces. Plus it comes with over THREE DOZEN font files which really brings out the page design features of PowerPAINT. Includes some BASIC programs too. $16.95 on disk or data pack. (DIGITAL EXPRESS).

Mr. T-SEARCH: Great word search puzzle maker. Five size options. Nice hardcopy (ADAM or dot matrix). Packed with nice features. $12.95 on disk or data pack. (Mr. T. SOFTWARE)

PHRASE CRAZE: Colorful graphics; good sound; two or three players; "Wheel of Fortune" type game; very realistic. $18.95 on disk or data pack. (REEDY SOFTWARE).

GAME (I and II): Each set is two volumes (14 songs with pictures); good entertainment; great for recording as video tape headers. $11.95 per set on disk or data pack. (DIGITAL EXPRESS)

SwiftPRINT: Powerful graphics file interchange program (RLE, SmartPAINT, GraphixPAINTER, and Paint-MASTER). A variety of picture print functions including COLOR for Okimate 20 owners. Requires at least a 64K expander. $14.95 on disk or DDP (DIGITAL EXPRESS).

SEARCHset (1 & 2): preset word lists for use with Mr. T-SEARCH. $8.95 each on disk or DDP (DIGITAL EXPRESS).

SmartTALK: multi-featured speech program with graphics and sound. For use with Eve SS/CC or TALKER by OrphanWare. Requires at least a 64K expander. $19.95 each on disk or DDP. (DIGITAL EXPRESS).

File Indexer: Great utility for organizing directories. Just $9.95 on disk or DDP. (AJM SOFTWARE).

DISK DOCTOR: Useful program for reconstucting a damaged directory. Just $9.95 on disk or DDP. (AJM SOFTWARE).

SwiftBASIC 80 (rv 2.1): Now the BASIC that you're used to can be used easily with the OrphanWare 80 column board. Plus there are many enhancements including DMP support and automatic RAMdrive capability with a memory expander. Just $11.95 on disk or DDP). (DIGITAL EXPRESS).

CARD SET (1 & 2): Now you can print nice greetings cards with PowerPAINT. Comes with three graphic cards, sprite art, and clip art. Just $12.95 on disk or DDP (each). (BRYAN'S SOFTWARE).

SwiftLINK: A multi-featured terminal program for use with the ADAMlink modem. Macros, phone library, RAMdrive, plus lots more. This is a freeware program which may contain minor bugs. We will notify you when updates are ready. This is version 1.0; updates will be available for a blank disk and 65 cents in postage. We need feedback and rigorous testing of the pgm. Only $11.95 on disk or DDP. (DIGITAL EXPRESS)

ASSORTED ITEMS

"floppy disk mailers" just 39 cents each
"Versa-Paks™" $1.50 each -- holds five 5.25" disks (blue or tan)
"Teak wood rolltop disk storage unit" holds 70 5.25" disks just $17.95
"Printer power supply" just $14.95 each
"TV/computer switch box" just $2.95 each
"RED or BLUE Panasonic ribbons" just $5.95 each
"black Okimate 10/20 ribbons" just $4.95 each
"Color Okimate 20 ribbons" just $5.95 each
"Nashua Disks" DS/DD; 10 per box; just $6.45
"EOS7 DISASSEMBLY" by George Havach just $1.95 each
"TYVEK™ SLEEVES" just 5 cents each
"Paper disk sleeves" just 3 cents each
"PICTORIAL GRAPHICS LIBRARY" by DIGITAL EXPRESS; 100+ pages; nicely bound; complete hardcopies of the PD graphics for PowerPAINT; arranged by size (screen, letterhead, workspace, clip art, sprites, fonts, and paint brushes) -- get the most out of PowerPAINT by knowing what's already available (and exactly where to find it); just $14.95 to N&B subscribers

PROGRAMMING UTILITY SOFTWARE

□□□ Intel-BEST 3.3   (by DIGITAL EXPRESS) $24.95 (retail) $19.95 (SDP)
* makes over 3 dozen changes to BASIC 1.0; comes with 9 very user friendly MUSIC commands

□□□ Intel-LOAD V1.0   (by DIGITAL EXPRESS) $15.95 (retail) $11.95 (SDP)
* converts BASIC 1.0 programs to load up to 12 times faster; stays in RAM; 2 BSAVE options

□□□ Intel-LOAD V2.0   (by DIGITAL EXPRESS) $15.95 (retail) $11.95 (SDP)
* converts BASIC 2.0 programs to load up to 12 times faster; stays in RAM; 2 BSAVE options; works only in STDMEM

□□□ SmartBEST V1.0   (by DATA DOCTOR) $16.95 (retail) $14.95 (SDP)
* makes several changes to BASIC 1.0; not compatible with Intel-BEST 3.3

□□□ SmartTRIX   (by DATA DOCTOR) $19.95 (retail) $14.95 (SDP)
* a set of 10 excellent programming aides; two very nice sprite programs; 60 page manual; disk & DDP versions not
compatible

□□□ BASICaide (rev 2)   (by Mr. T. SOFTWARE) $11.95 (retail) $9.95 (SDP)
* several BASIC 1.0 enhancements; new CHAIN command; new BIN command to store fast loading programs; macros; fixes;
more

□□□ TurboDISK 1.0   (by DIGITAL EXPRESS) $24.95 (retail) $19.95 (SDP)
* creates ramdisk ability with BASIC 1.0; corrects several BASIC bugs; includes TurboCOPY -- very nice media control
and copy utility; requires 64K expander

□□□ MegaUtil   (by MARATHON COMPUTER) $32.95 (retail) $27.95 (SDP)
* an excellent collection of varied programming aids; includes ByteWriter (block editor), CopyWriter (media backup
utility), PD modules, programming tips, plus more

□□□ TurboDISK 2.0   (by DIGITAL EXPRESS) $15.95 (retail) $11.95 (SDP)
creates a powerful ramdisk ability for BASIC 2.0 and a 64K expander; disables EXTMEM command

□□□ MegaDISK 1.0   (by DIGITAL EXPRESS) $24.95 (retail) $19.95 (SDP)
* creates the ramdisk ability for BASIC 1.0 or your own Z80 programs; works with 64K, 128K, 256K, 512K, and 1M
ORPHANWARE memory expanders; automatically checks size of your XRAM card; does NOT disable NMI interrupt (FLASH,
etc.); comes with 5 PD programs including EZfileXFER; much, much faster than a Coleco disk drive; self-booting or can
be BRUN after BASIC

□□□ XRAMpak I   (by DIGITAL EXPRESS) $19.95 (retail) $14.95 (SDP)
* the perfect companion for MegaDISK 1.0 and your ORPHANWARE memory expansion board (any size); includes XRboot (boot
BASIC 1.0, ADAMcalc, and ADAMlink in about 2 seconds), XRcopy (a VERY powerful copy utility uses ramdisk space ABOVE
your files stored there -- great for multiple copies of PD software), PACK and UNPACK (compacts and decompacts your
favorite utilities into/from one large file for quick system setup), EZfileXFR2 (faster than EZfileXFER, by not
restarting the directory after each transfer)

□□□ AUTOWRITER   (by Mr. T. SOFTWARE) $15.00 (retail) $14.25 (SDP)
* a menu driven utility that writes machine code routines and BASIC subroutines (included) of your choice to a user
designated data pack or disk; file may then be merged with existing programs to add special features; detailed
instruction manual

DOT MATRIX PRINTER SOFTWARE

□□□ FILE PRINTER   (by Terry Fowler) $9.95 (retail) $9.45 (SDP)
* a fine set of BASIC utilities for use with your dot matrix printer; prints SmartWriter compatible files; allows you
to set default printer functions; (price goes UP at the end of November)

□□□ ShowOFF II   (by DIGITAL EXPRESS) $19.95 (retail) $14.95 (SDP)
* machine code print enhancements for SmartWriter (adds 32 print controls and 5 CONTROL functions to SmartBASIC;
requires Centronics parallel interface, a Panasonic KXP-1080 or 1080i printer, and at least a 64K expander

□□□ ShowOFF IIa   (by DIGITAL EXPRESS) $19.95 (retail) $14.95 (SDP)
* very similar to ShowOFF II except that it is compatible with any dot matrix printer that supports Epson FX escape
codes; works with Epson, Star, and printers and the Okimate 20; does NOT include line justification commands or
internal document margin control; requires at least a 64K expander

□□□ Fast & Calc Patch   (by ORPHANWARE) $9.95 (retail) $8.95 (SDP)
* FastPatch 2.0 directs all printer output to your parallel interfaced printer -- can be used with SmartBASIC 1.0,
SmartWriter, and SmartFiler; CalcPatch directs ADAMcalc output to your dot matrix printer; neither patch includes
special printer commands -- works just like the standard ADAM versions

□□□ LinkPatch   (by ORPHANWARE) $9.95 (retail) $8.95 (SDP)
* ADAMlink II telecommunications software with up and down loading of ASCII files; plus directs printer output to your
dot matrix

RECREATION/GAMES SOFTWARE

☐☐☐ MageQuest (rev 2)   (by REEDY SOFTWARE) $16.95 (retail) $14.95 (SDP)
* superb graphic adventure; includes 9 levels of play in the main adventure plus 3 solo adventures; additional solo
adventures available from REEDY SOFTWARE

☐☐☐ TriviaPac I   (by Mr. T. SOFTWARE) $17.95 (retail) $14.95 (SDP)
* 1200 questions; 6 categories; one to four players; graphics and sound; hall of fame; many hours of fun

☐☐☐ Kid's TriviaPac   (by Mr. T. SOFTWARE) $17.95 (retail) $14.95 (SDP)
* 1080 questions; 6 categories; one to four players; graphics and sound; hall of fame; many hours of fun

☐☐☐ Strategy Strain   (by DATA DOCTOR) $18.95 (retail) $14.95 (SDP)
* nine intellectually challenging computer classics; graphics and sound; good Star Trek game

☐☐☐ Lab Mouse   (by REEDY SOFTWARE) $13.95 (retail) $11.95 (SDP)
* exciting game that puts you in the role of a laboratory mouse stuck in a maze; all hi-res graphics; 5 skill levels

☐☐☐ Entertainment Pack   (by REEDY SOFTWARE) $16.95 (retail) $14.95 (SDP)
* three challenging computer classics (connect 4, blockade, and slide puzzle); great graphics; fast animated sprites;
one or two players

☐☐☐ Stage Fright   (by REEDY SOFTWARE) $16.95 (retail) $14.95 (SDP)
* extensive text adventure in which you play the role of an actor or actress trapped in an abandoned theater; some
graphics and sound; easy to play -- challenging to win; game save option; three progressive levels of play

☐☐☐ Diablo   (by IMAGE MICROCORP) $19.95 (retail) $18.95 (SDP)
* a maze-like game in which the play field consists of user movable tracks on which you try to keep a ball in motion;
good graphics; requires substantial strategy to play

☐☐☐ Black Gold   (by IMAGE MICROCORP) $19.95 (retail) $18.95 (SDP)
* a board style game for one to four players; compete by digging for oil; good graphics

☐☐☐ Stock Market Game   (by IMAGE MICROCORP) $19.95 (retail) $18.95 (SDP)
* a board style game for 1 to 4 players; see who makes the biggest profit buying and selling stock; a relatively good too
l for learning about the stock market; more enjoyable with some stock market understanding

☐☐☐ Centipede   (by AtariSOFT) $12.95 (retail) $11.95 (SDP)
* the still popular arcade game in which you shoot away segments of oncoming centipedes; available in cartridge ONLY;
one or two players

☐☐☐ Defender   (by AtariSOFT) $12.95 (retail) $11.95 (SDP)
* the action packed arcade game in which you shoot attacking alien ships and attempt to save inhabitants of the planet
below; available on cartridge PLUS disk or data pack (specify which one you want with the cartridge); one or two
players

☐☐☐ Beyond Trek   (by Digital Express) $19.95 (retail) $14.95 (SDP)
* pits you against hostile klingons; very good graphics; good sound/music; protect 4 starbases and annihilate the
klingons; you command the Enterprise; hall of fame for 10 high scores (for session or all-time); requires at least a
64K expander

☐☐☐ Chess Champ   (by Digital Express) $19.95 (retail) $14.95 (SDP)
* the FIRST graphic chess game for the ADAM; great graphics; easy user interface; 10 skill levels; a little slow on
higher skill levels; good chess playing companion; take back last move; edit board; on-line instructional; store/load
up to 52 games per disk or data pack; requires at least a 64K expander

COLECO COPYRIGHTED SOFTWARE

☐☐☐ SmartLOGO   (data pack only) $18.95 (retail) $15.00 (SDP)
* Coleco's version of the popular structured language; good for graphics and sound control; 350+ page manual

☐☐☐ SmartFILER   (data pack only) $12.95 (retail) $10.00 (SDP)
* Coleco's general purpose database program; easy electronic filing system; search features; 38 page manual

☐☐☐ ADAMcalc   (data pack only) $18.95 (retail) $15.00 (SDP)
* advanced electronic spreadsheet; comes with sample templates; 154 page manual

☐☐☐ CP/M 2.2   (data pack only) $26.95 (retail) $25.00 (SDP)
* Coleco's version of the still popular operating system; 1000's of public domain supporting programs; 250+ pages

GUIDES/BOOKS/INSTRUCTIONS

☐☐☐ Hacker's Guide (vol 1)   (by Peter & Ben Hinkle) $12.95 (retail) $11.95 (SDP)
* The Hinkle's in - depth guide to the technical aspects of exploring ADAM; 60 pages; 18 programs

☐☐☐ Hacker's Guide (vol 2)   (by Peter & Ben Hinkle) $12.95 (retail) $11.95 (SDP)
* The Hinkle's detailed guide to SmartBASIC V1.0; 110 pages; HELLO program includes several BASIC fixes and enhancements

☐☐☐ Hacker Software   (by Peter & Ben Hinkle) $5.95 (retail) $3.95 (SDP)
* the programs from volumes one and two (above)

☐☐☐ ez ref 101   (by DIGITAL EXPRESS) $2.45 (retail) $1.95 (SDP)
* approximately 700 Z80 instructions listed in NUMERICAL sequence; 9 pages; decimal, hex, op code, operands; good for disassembling machine code; holes drilled for easy binder insertion

☐☐☐ ez ref 102   (by DIGITAL EXPRESS) $2.45 (retail) $1.95 (SDP)
* approximately 700 Z80 instructions listed in ALPHABETICAL sequence; 9 pages; decimal, hex, op code, operands; good for assembling machine code routines; holes drilled for easy binder insertion

☐☐☐ ez ref 103   (by DIGITAL EXPRESS) $3.95 (retail) $2.95 (SDP)
* study of ADAM's EOS; jump table vectors, routines, setup for CALLs, exit register meanings; plus several assorted tables that have appeared in N&B; 21 pages; holes drilled for easy binder insertion

☐☐☐ Pinball/HardHat Guide $3.95 (retail) $2.95 (SDP)
* 40 pages of instructions for the popular public domain package; holes drilled for easy binder insertion; includes Pinball reference chart

"NIBBLES & BITS" SOFTWARE

☐☐☐ N&B binder01   (by DIGITAL EXPRESS) $29.95 (retail) $24.95 (SDP)
* all six issues from 07/86 thru 12/86; sturdy 3-ring binder; includes two DDPs or two disks containing all the programs

☐☐☐ N&B binder02   (by DIGITAL EXPRESS) $29.95 (retail) $24.95 (SDP)
* all six issues from 01/87 thru 06/87; sturdy 3-ring binder; includes two DDPs or two disks containing all the programs

☐☐☐ N&B issue programs   (by DIGITAL EXPRESS) $6.95 (retail) $3.95 (SDP)
*set01: all the programs from 07/86 thru 09/86   *set02: all the programs from 10/86 thru 12/86
*set03: all the programs from 01/87 thru 03/87   *set04: all the programs from 04/87 thru 06/87
*set05: all the programs from 07/87 thru 09/87   *set06: all the programs from 10/87, 11/87, & 03/88
*set07: all the programs from 4/88 thru 6/88

GRAPHICS DESIGN SOFTWARE

☐☐☐ ShowOFF I   (by DIGITAL EXPRESS) $29.95 (retail) $24.95 (SDP)
* graphics design package (enter text, draw polygons, paint, save pictures, etc.); fast color changes; a variety of print options (preset for Epson FX / IBM 5152 printer codes); printing graphics requires Centronics parallel interface for printer

☐☐☐ CLIPPER   (by DIGITAL EXPRESS) $19.95 (retail) $14.95 (SDP)
* introduces the concept of "clip art" to ADAM; totally machine code program; build clip art collections; put clip art in hi-res pictures; draw and edit clip art; also capture from hi-res pictures; enter text; change colors; includes an 11K ramdisk (does NOT require 64K expander)

☐☐☐ FontPOWER   (by DIGITAL EXPRESS) $16.95 (retail) $12.95 (SDP)
* utility using Coleco-like graphics for designing your own font sets; comes with 8 font sets including "script", "Roman", "cory", and "bold"; shows you how to use the font sets in high or low resolution graphics; plus three font shape tables for HGR and HGR2 modes; includes demos; fonts can be used in your own BASIC 1.0, BASIC 2.0, and z80 programs

☐☐☐ SpritePOWER   (by DIGITAL EXPRESS) $19.95 (retail) $14.95 (SDP)
* totally machine code utility using Coleco-like graphics for designing your own sprites; includes 3 sets of sprites; extensive instruction manual; shows you how use sprites in BASIC 1.0, BASIC 2.0, and Z80 programs; includes PUFF; includes 11K ramdisk (does not require 64K expander); very easy to use program

☐☐☐ PowerPAINT   (by DIGITAL EXPRESS) $44.95 (retail) $34.95 (SDP)
* 80K machine code graphics processor for ADAM; the most extensive graphics design program available; uses Coleco-like graphics; a large variety of file storage and retrieval options (directly loads PaintMASTER, SmartPAINT, GraphixPAINTER, SmartLOGO, and RLE pictures); quick global color changes; move, copy, and erase options; many hardcopy print options (screen, labels, letterheads, and whole picture); screen scroll options; four screen pictures with 64K card (8 screen picture with 256K or 512K expander); uses FontPOWER font sets, CLIPPER clip art, and SpritePOWER sprites; requires at least a 64K memory expander; requires a Centronics parallel interfaced Epson FX or IBM 5152 compatible dot matrix printer for hardcopies; fully compatible with SmartPAINT; you can easily UNDO changes

MISCELLANEOUS SUPPLIES

□□□ Coleco/LORAN digital data packs $29.95 (retail--for 10) $3.95 (retail--each)
                                             $24.95 (SDP--for 10) $2.95 (SDP--each)
* designed and formatted by Loranger Manufacturing; no face label

□□□ plain label digital data packs $19.95 (retail--for 10) $3.45 (retail--each)
                                             $17.95 (SDP--for 10) $2.25 (SDP--each)
* Sony brand formatted by E&T SOFTWARE; no face label

□□□ plain lable 5.25" disks for ADAM $6.95 (retail--for 10) $.79 (retail--each)
                                             $4.25 (SDP--for 10) $.49 (SDP--each)
* double-sided; double density; includes envelope and write protect tabs

□□□ printer ribbons for SmartWRITER printer $15.95 (retail--for 3) $5.75 (retail--each)
                                             $14.45 (SDP--for 3) $4.95 (SDP--each)
* black ink; standard replacement ribbon cartridge

□□□ Panasonic printer ribbon $5.45 (retail--each)
                                             $4.95 (SDP--each)
* black ink; nylon; standard replacement ribbon for 1080, 1080i, 1090, 1091, 1091i, and 1092

□□□ standard multipurpose adhesive labels $5.45 (retail--for 1000) $2.95 (retail--for 500)
                                             $3.95 (SDP--for 1000) $2.25 (SDP--for 500)
* white, pin-feed, 3 $^1/_2$" by $^{15}/_{16}$"; fan fold; single column

□□□ multipurpose adhesive labels $9.95 (retail--for 1000) $6.95 (retail--for 500)
                                             $7.95 (SDP--for 1000) $4.95 (SDP--for 500)
* white, pin-feed, 4" by 1 $^7/_{16}$"; fan fold; single column

□□□ word processing computer paper $4.25 (retail--for 250 sheets)
                                             $3.45 (SDP--for 250 sheets)
* white; pin-feed; 9 $^1/_2$" by 11"; fan-fold; 20 lb. wt.; clean edge; one part

EDUCATIONAL SOFTWARE

□□□ Spanish Vocabularian   (by MARATHON COMPUTER) $18.95 (retail) $16.95 (SDP)
* a unique program for ADAM; includes electronic dictionary; comes with 1600 words; expandable to 7400 words; quizzes; printed study sheets; report cards

□□□ QuikFax Quest   (by DATA DOCTOR) $18.95 (retail) $14.95 (SDP)
* three academic quizzes; includes study mode (on - screen and hardcopy); US capitals, world capitals, and Chemistry elements

HOME/BUSINESS SOFTWARE

□□□ SoftPACK I   (by E&T SOFTWARE) $18.95 (retail) $18.45 (SDP)
* four menu driven home management programs; SoftCHECK, Checkbook Totalizer, CheckBook Reconciler, and SoftMailer (address filer for labels and envelopes)

□□□ Business Pack I   (by E&T SOFTWARE) $18.95 (retail) $18.45 (SDP)
* two useful programs for creating and printing address files; plus two very good programs for inventory control and printing

■□■□■□■□■□■

□□□□□ "SDP" stands for Subscriber Discount Price. N&B subscribers get a 5% to 25% discount off the suggested retail price of items listed.

□□□□□ Unless otherwise noted, all software is available on disk or datapack.

□□□□□ All DIGITAL EXPRESS storage media (disks and data packs) are warrantied to be free from defects in materials and workmanship. If the storage medium proves defective, return it to us for replacement or repair (at our descretion). After 90 days from purchase, a $3.00 return shipping fee is required.

□□□□□ The product prices listed herein may be subject to change after September 15, 1988.

■□■□■□■□■□

CLIP ART
from: PaintMATES06
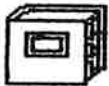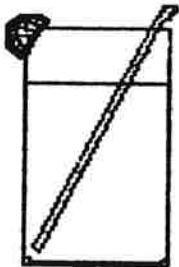
Public Domain Software Info

Public domain software is offered as a quick, inexpensive means for you to expand your ADAM software library. Note, however, that public domain software is not necessarily of commercial quality. Although, we do attempt to winnow out flawed programs, there is no guarantee of the quality regarding these packages. If, however, the storage medium itself proves defective within 90 days of purchase, we will replace it free of charge.

You may get any of the volumes described below on digital data pack for $5.95 or on disk for $4.95. Subscribers also have an option to get a volume FREE (limit three per calendar month).

Here's how to get one FREE. (1) Contribute an original program for any library. (2) send a signed statement that the program is NOT copyrighted. (3) send the program on DDP (digital data pack) or disk; one DDP or disk for each volume that you want to exchange. And, (5) include a return mailer with sufficient postage or send $3.00 for shipping costs.

SmartBASIC V1.0 LIBRARY

Each of these volumes is self-booting with SmartBASIC stored on the volume. When you pull the reset, a graphic screen will be displayed as BASIC loads. All programs will speed load. Each volume (except the utility volumes) is controlled by a user friendly ramdisk (does NOT require the 64K expander) central menu for easy file selection. Each volume contains over 120K of files.

N&Bgames (volumes 1, 2, & 3): an assortment of text adventures, board games, and animation games.
N&Bgraph (volumes 1 & 2): a variety of graphics displays and music programs.
N&Bmath (volumes 1 & 2): several scientific and financial math programs.
N&Butil (volumes 1 & 2): an assortment of programming utilities.

GRAPHICS FILES LIBRARY

In order to view/use the hi-res picture files in this library you need SmartPAINT (from ShowOFF I), the HGR Picture Manager program (02/87 N&B, page 16), or PowerPAINT.

N&Bpix (volumes 001 thru 026): 13 screen pictures each.
Art Gallery (volumes 1 & 2, compiled by REEDY SOFTWARE): 13 screen pix each.
PaintMATES (vol 1 - 9): small art for use with PowerPAINT (fonts, sprites, clip art, & brushes).
PaintFORMS (vol 1 - 3): one full page graphic, 3 letterheads, & 1 label for use with PowerPAINT.
PixManII: switch pictures between RLE, SmartPAINT and PaintMASTER formats; includes SW docs.
PowerVERSES (vol 1 - 3): BIBLE verses stored as hi-res screens by D.L. DECKER ENTERPRISES.

CP/M 2.2 LIBRARY

CP/Mgames (volumes 1 & 2): assorted EBASIC (included) games.
demo carts: requires 64K XRAM card; music samples, system tester, much more.
CP/Mutil01: a variety of utility .COM files for CP/M.
Z80programmer (vols 1 & 2): assorted utils for advanced programmers; donated by D.L. Decker.

MISCELLANEOUS COLLECTIONS LIBRARY

MWplus01: a collection of improvements to MultiWrite (required); by Jim Guenzel.
N&Bacalc01: several paradigm and other files; 148K; by Terry Fowler.
EZpak: self-booting medium; contains EZmenu & EZcopy.
ezFILER: self-booting medium; contains nice BASIC address filer.
SHAPEMAKER: several font shape tables; nice shape design utility; by Guy Cousineau.
N&Blogo01: a variety of SmartLOGO (required) files.
One Minute Formatter: 1 or 2 drives, single or double sided, same time, plus more.
MusicBOX (vol 1 & 2): 10 SmartTUNES songs each, plus instructions, and more.
Guy's Games: self-booting collection of graphic, thinking games.
Guy's Misc. Utils: assorted BASIC utilities by Guy Cousineau.
Bowling Diary: self-booting database for tracking bowling performance; by Hector Sanchez.
ADAM FB Analyzer: helps pick winners with NFL score tracking; by Hector Sanchez.
MediaMATE: Includes media editors by D.L. Ewing, Brett Lynn, and Guy Cousineau.
French BASIC: includes numerous enhancements and new commands; includes demo.

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