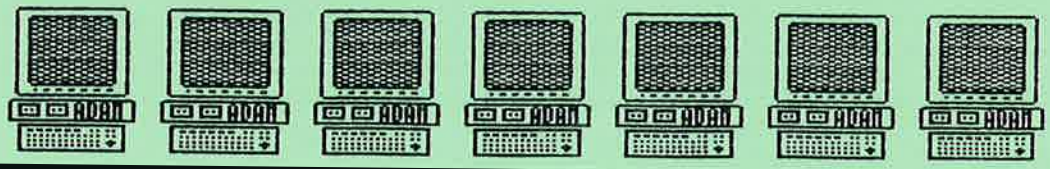
NIBBLES & BITS



THE COMPREHENSIVE MONTHLY NEWSLETTER FOR THE ADAM COMPUTER

July 1988 issue #22

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

CREATIVE COMPUTING
FOR THE ADAM

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.

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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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ADAM NEWS AND UPDATES

□□□ You'll note that we have a different color for the cover page. We change colors at the beginning of each fiscal year. This issue marks the start of our THIRD YEAR serving the ADAM community. Thank you for your support.

□□□ BRYAN'S SOFTWARE has finished their first two CARD SETS for use with PowerPAINT. See the ad on page 24 of this issue for more details.

□□□ AJM SOFTWARE, headed by Tony Morehen and Guy Cousineau, has finished another revision to their fine utility FILE MANAGER. See the review in this issue of version 2.1.

□□□ DIGITAL EXPRESS has started a special extension option to N&B subscribers. We will mail issue program disks every other month. The first bi-monthly disks will go out in AUGust, within a couple of days of the AUGust issue of N&B, and include all the programs from the July and AUGust issues. Thereafter DISK PAKS will go out on even numbered months to include programs from that and the preceding month. This option is ONLY available on DISK. The cost is only $12.00 per year (the DISK PAK term does not have to coinside with your N&B term) for six disk packs. This is less expensive than ordering the quarterly disk sets and far easier than typing the programs in yourself. Until AUGust 5, we're accepting charter DISK PAK subscribers for the introductory price of just $10. Join today; save time and money.

□□□ TELEGAMES is reported to have just completed a new video game system which retails for just under fifty dollars, Telegames Personal Arcade. Active marketing should begin this Fall. The really good news is that their new system will play any ColecoVision compatible cartridge. The converse should also be true; thus, we can expect to start seeing some new ADAM compatible games in the near future.

□□□ GJMG Enterprises is reported to be working on new action games of Super Game Quality. Of course, these will be written in fast machine code. They're the folks who brought us the excellent QuikCOPY utility.

□□□ The Calgary ADAM Family has released a new modem program for use with the ADAMlink modem. t runs under standard EOS; it does not require CPM. It is available for $20 on disk ($22 on tape) plus $2.00 for S/H.

ADAM'S FAMILY
6508 34 Street SW
Calgary, Alberta
CANADA T3E 5M2

□□□ REEDY SOFTWARE has released two new titles for the ADAM. PHRASE PAK TWO is a special Show Biz pack for use with their fine PHRASE CRAZE ($7.95 on disk; $9.95 on tape). GRANDMA'S RECIPES is a collection of several dozen "delicious" recipes (ranging from desserts to main courses) for use with Coleco's RECIPE FILER.

REEDY SOFTWARE
10065 60TH Street, SE
Alto, MI 49302

□□□ Mel Ostler has finished his latest educational book on programming ADAM in machine code, FROM BASICS TO BASIC. This one provides a good foundation for those who found his LEARNING TO READ WITH ADAM too difficult. His new text is just $15.00 plus $3.00 for shipping. We'll have a review next month.

Mel Oster
7641 Raasaf Boulevard
Las Cruces, NM 88005

□□□ Mel Ostler has adapted a multi-key keypad for use with the ADAM. It includes the 10 number keys, some symbol keys, and 31 function keys. It attaches to the standard keyboard and may be unplugged if not needed. Send a working keyboard and $49.95 to the address above to get this innovation installed.

□□□ OrphanWare has postponed a few of their projects due to hardware piracy. New models will be patented and copyrighted and include PALs for copy protection. They are also working on a new parallel interface that will be compatible with existing software.

□□□ Walter's Software has just completed a new spelling checker the the ADAM. SPELLING AIDE is only $29.95 and comes with 7000 words; and it is expandable. Extra dictionaries will soon be available too. The package is very fast because it can be used in conjunction with any size of OrphanWare compatible memory expansion card.

Walter's Software
Route 4, Box 289-A
Titusville, PA 16354

□□□ The Paper Peripheral, published by Tri-Angle ADAM Users, has ceased publication -- this is so that the editor, Paul Pappas, can devote full efforts to his column in *Computer Shopper*. All subscribers to TPP received prorated refunds!!!

□□□ E&T SOFTWARE is working on a 10 MEG hard drive for use with the ADAM. It will initially be setup for use under EOS (GoDOS too) with CP/M also under consideration. The projected price will be $350.00. They are asking for us to survey our readership to get an idea of how many ADAM owners would be interested in making a purchase of the unit when it is released. Please write directly to N&B to let us know if you're interested.

□□□ Tony Patterson, from Mississippi, was the winner of OrphanWare's 320K disk drive give away on their BBS. They will have another contest soon. See their ad in this issue for loggon details.

□□□ The July special for DIGITAL EXPRESS is a FREE PD volume of your choice with any product order with a subtotal greater than $50.00. Be SURE to mention the special and your CHOICE on the order form. This applies both to DDP and disk purchasers.

□□□ AJM SOFTWARE has released two new utilities written entirely in machine code. Each is available on disk or data pack to N&B subscribers for JUST $9.95. We will have reviews next month. DISK DOCTOR helps you rebuild a damaged EOS directory -- easy to use. FILE INDEXER lets you read, sort, and print EOS directories. You can also use it to produce a disk file containing many directories. It will sort these and store them in a file that SmartWriter can use.

□□□ We have some more NEW PD graphics volumes. "N&Bpix22" is finished along with PaintMATES 06 and 07 (clip art for use with PowerPAINT). Also, D.L. Decker Enterprises has donated three volumes of SmartPAINT pictures entitled Power-VERSES. Each one contains Bible verses for you to print with PowerPAINT or SmartPAINT.

□□□ DIGITAL EXPRESS will draw one name from all those who make a purchase greater than thirty dollars between the 15th of July and the 15th of AUGust. The winner will receive a FIFTY DOLLAR purchase credit with DIGITAL EXPRESS that can be used anytime this year.

□□□ The Freedom Church BBS is an ADAM CP/M system. The SYSOP is Ed Walton. Give them a call.

1 (801) 566-6962
7pm - 5am

□□□ The Computer Quorum of America reports that their first Jeopardy question pack should be finished early this Fall.

□□□ D.L. Decker Enterprises plans to start mailing their first bimonthly disk in AUGust. To get in on the introductory discount send $29.95 for disk or $34.95 for tape version before September 1 (rates will increase by five dollars). Each issue promises to be packed with programs and general information.

D.L. Decker Enterprises
Route 2, Box 15
Spring Mills, PA 16875-9720

□□□ We are working in conjunction with two other firms to have a print head scanner (digitizer) made specifically for the ADAM. We will be working on the software end. The projected price is $99. We need to have a rough estimate of how many of you would be interested in the device. Please write to let us know as soon as possible.

□□□ MAGnet is a new newsletter for ADAM published by the Manitoba Adam Group. They plan to have 11 issues per year; subscriptions are $20. The first two issues are already out for this hardware oriented publication.

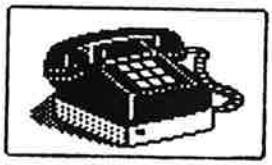
MagNET
888 Templeton
Winnipeg, Manitoba
CANADA R2V 6S1

□□□ DIGITAL EXPRESS has released a new version of SmartBASIC compatible with OrphanWare's 80 column video unit. Now you can have the familar BASIC (plus lots of extra features including a RAMdrive with any size memory expander). It's just $14.95 retail and only $11.95 to N&B subscribers ... SwiftBASIC 80 (2.1).

□□□ Don't forget about our special on PD software. Buy 10 volumes on disk for only $39.95 ($49.95 on tape) and get another one of your choice FREE. Offer ends September 1.

OVER THE PHONE LINES

by David E. Carmichael



It happened one night, not too long ago. I was busy typing a program LISTing from this fine newsletter, NIBBLES & BITS. I was too busy to notice the weather; a storm had moved into town. To my surprise, there was a crackle of lightening. In a flash all the lights in my home doubled in brightness. My disk drives started spinning and then I was in total darkness.

Later I found out that a bolt of lighting had hit a local power line. BOY, was I lucky!! All I lost was two replaceable SmartBASIC program LISTs. Why was I lucky? I had some degree of protection from this type of electical catastrophe.

I have met, heard of, and read of other users who have NOT taken the precaution of spending a few bucks to get power line filters. I only needed to replace all the light bulbs and line filters that were in use at the time; doing this cost me under $100. But if I had to pay to replace my TV's, VCR's, STEREO, and COMPUTER SYSTEM's, I would have suffered thousands in damage

What does this have to do with COMPUTER TELECOMMUNICATIONS, you may wonder. The same sort of damage can be done through a phone line.

A close friend used to run a local BBS system on his RADIO SHACK TRS MODEL III computer system. One day the local electric company was doing some work on above ground power lines when they crossed over to the PHONE LINE and burned out every phone line for a ten block area! ZAP ... OVER 220 VOLTS going through the phone line and into his computer system via his MODEM. This system now looks like burnt toast -- the heat alone melted the computer housings. And, he was lucky that a fire did not ensue.

While the electric company paid to REPLACE every TELEPHONE that their workers had damaged, they would not replace this computer system. How could this user have protected his computer investment? With a small device called a "PHONE LINE SURGE PROTECTOR" -- it can help save your system from voltage surges to your telephone and computer equipment that may happen to come into your system through the phone line. I have seen this type of device priced around the TWENTY DOLLAR range (including S/H).

Now you say that you don't run a BBS so why should you spend the money on a device like this, right? Wrong. If you were online with a local BBS when this type of power surge came into your computer system ... no more computer!

Take the little bit of time and money involved and protect your computer investments. Your local electric supply store should have a number of surge protection devices for both your system's power supplies and phone lines.

AMERICAN PEOPLE LINK

David Carmichael: NEWS ITEM

It has been reported that a number of computer users have had trouble receiving logon information about "American People Link". If you have requested info from either the toll free (800) or modem number and did not receive it, please take the time and send a note to the following address explaining in as much detail as you can recall about the date. We are working to correct the problem.

L.O.F. COMMUNICATIONS
P.O. Box 587
York, PA 17405-0587

ASSEMBLY LANGUAGE AND CP/M 2.2

by Guy Cousineau

- continuing from last month -

Let's trace program execution by typing: -t9; this means trace nine steps. Now the DDT really goes to work and traces not only program execution, but also the values in the registers and conditions of the flags. The first three lines go okay, and I can see the value "61" appearing in "E", the value "2" appearing in "C", and then the CALL to "5". All the way through, the program counter reminds me where I am. Then something funny happens; the program counter starts to jump around and I see strange code which is not part of my program. That's okay, DDT is jumping into the BDOS to execute my command. The last step of my trace command is the actual jump into the BDOS which is not traced; it is executed instead. I see an "a" followed by the next program counter. This means that the next address to execute is the RET which is the end of my program. Nothing is wrong here.

Working with DDT may be annoying if your are debugging Z80 programs (not 8080), but there are similar programs written for Z80; get one. Using DDT you can temporarily patch programs and try different values to be sure your program really does work (or determine the problem). See your user's manual for further instructions on the features of DDT.

THE STACK

One of the hardest things to manage in assembly programs is the stack. Once you get involved in complicated programs, you will have many subroutines that may, in turn, CALL others. In addition, subroutines may have more than one exit point. Two problems present themselves: size of the stack and maintaining control.

STACK SIZE

Stack size is affected by the number of CALL's and the number of PUSH instructions. Each time you CALL a routine, the program counter is PUSHed onto the stack; two bytes are used. To determine maximum stack space required, trace your most deeply nested subroutine to count the number of PUSH and CALL instructions. Multiplying by two will give you the required space size.

After a while you may decide on an arbitrary figure of 20 or 30 bytes for most programs. That amount of overhead is negligible. Excessive use of the stack is not recommended because it is too easy to lose control.

If you want to save values for later use, you may limit stack activity by saving them in fixed DS areas with a "LD (nnnn), HL" command and retrieve them later with "LD HL, (nnnn)". This technique is safer but tends to use a bit more RAM space.

If you CALL a subroutine that makes use of some registers, PUSH only the ones that need to be preserved. PUSHing them all is a waste and makes for sloppy programs.

KEEPING CONTROL

At first it may be easier to keep the stack pointer at the right place by branching all your exits to the end of the subroutines where they can POP any required registers before RETurning. Once you have more experience, you may take a paper copy of your program and map out all your PUSHes. And, remember to POP registers in the opposite order that they were PUSHed:

```
PUSH  BC
PUSH  DE
CALL  GETKEY
POP   DE
POP   BC
```

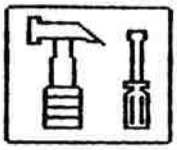
GETTING IT TO WORK

The first priority in writing an assembly language program is to get it to do what you want it to do. Everything else should come after this. There is not much point in having fancy messages, displays, and ringing bells if your program does not work. After it works once, don't be satisfied. Test it again, especially if disk I/O is used. There are many variables that may affect your program adversely. These include full directories, full disks, bad sectors, and write protect tabs.

Once a program is fully debugged, it is time for the embellishments: pretty it up, make it work faster (if that is a concern), or reduce its size. Sometimes reducing code size may slow a program's execution. Keep this in mind before making major modifications. Don't lose a working program by changing it only to find out that it does not work anymore. Save a backup of your working prototype so you can go back to it. Believe me, I have needed my backup versions more than once.

HARDWARE DESIGN

by John R. Lingrel



EDITOR'S NOTE: This article commences a series on interface projects for the ADAM by hardware guru John R. Lingrel, founder of OrphanWare. In June there was a lot of heated activity between a few ADAM support firms regarding an alleged new parallel interface for the system. The situation is a lot more calm now. The other hardware manufacturer and OrphanWare have decided to patent entirely new designs. And, John has decided to make public the inside information on his PIA2.

The OrphanWare PIA2 and the EVE SP-1P (and SP-1) are currently the only legal commercially produced parallel printer interfaces for the ADAM in this country. Capitol Software used to produce an interface for the OKIMATE 20 (using a Commodore 64 emulation) that plugged into the modem port, but I don't think that it is available anymore.

Both the PIA2 and SP-1P have similarities, such as accessing the same I/O port. But, what goes on inside is entirely different. We will not discuss the inner workings of the EVE ports, as that is a design which still belongs to EVE Electronics.

In order for the ADAM to print to a dot matrix printer, the software will have to do two things right away. First it must determine that the printer is ready to accept a character; and second, it must send that character. To check the status of the printer, the Z80 must read the port and check the printer ready bit. To do this, software will use the assembly command IN, 40h. This command will put the address on the least significant 8 address lines. (The Z80 never uses more than 255 I/O ports.) It will also take the IORQ (In/Out ReQust) and drive it to a LOW state. At the same time, the READ line from the Z80 will also go low. Out at the PIA2, the two 74LS32's and the 74LS138 decode the address and determine that HEX 40 is a legal address. It then uses the IORQ to determine that this is an I/O operation, as opposed to a memory read or write. Now that it has been determined that this is a command for the PIA2 to send the printer status to the Z80, the decode logic will enable the 74LS368 and put the 74LS374 into a high impedance state. The status bits from the printer are routed through the LS368 to the Z80 data lines. The Z80 will receive these in the accumulator.

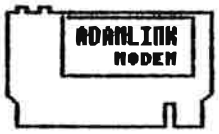
Now we have software check to see if the printer is ready. If it is, then we go on to the actual print routine. If not, we will loop on a ComPare statement until the printer is ready.

Now, assuming that the printer is ready, the software must load the A register with the ASCII character that we want to print. This is done with a LD A command. The data can be any legitimate ASCII character or control value. Once LoaDed in the accumulator, the Z80 is commanded to do an OUT, 40h command. This puts the ASCII value on the 8 bit Z80 data buss, the address (40H) on the eight least significant address lines, and drops both IORQ and WR to a low state. RD goes high.

Once again, the PIA2 decode logic will determine that this is an I/O operation which it needs to respond to. The 74LS374 is connected directly to the Z80 data buss, and as soon as the data shows up at the chip and the decode logic has determined that this is a write command, the data is LoaDed into the eight registers of the LS374. At the same time, IORQ and WR are decoded to put the 74LS368 into a disabled state. (This stops data from going from the printer to the Z80 data buss.) Now, we send the STROBE signal to the transistor via the 7404 chip. When the transistor turns on, it pulls the circuitry inside the printer low, telling the printer that it is to accept the data presented on its data lines. From here, the printer does its magic and we see the character or graphic appear on the paper.

I will write about printers in a later article. In the next installment of this series, we will present the schematics and drawings for the PIA2 and show you how you can build one for yourself for less than $12.00.

CP/M MODEM PROGRAMS



by: Rob Friedman

As ADAM users, we have the opportunity to use several modem progams at absolutely no cost to us whatsoever. These are referred to as Public Domain or PD (there is no copyright on them so that they are available to everyone free of charge). All the progams that will be discussed here are used for downloading any type of file, binary or text. Binary files are machine code files such as ".COM" files in CP/M.

There are two for use with the ADAMlink internal 300 baud modem. And, there are four for use with a serial port, such as the OrphanWare serial port or the EVE Electronics SP-1, and an external modem. The internal modem programs are **madam7** (a variation of the original **modem7** and **mex114** (which stands for Modem EXecutive). The external programs are **mex114**, **imp245** (stands for Improved Modem Program), **CSexec** (stands for CompuServe EXECutive), and **Kermit** (Celtic for *free*). This gives us quite a variety of options for modem programs. Brief descriptions and opinions (mine) follow.

Let's start with the first program I received (also it is the the earliest Adam CP/M program) **madam7**, adapted by John Moore. This is a very capable program for the internal modem. In fact, this was the only program I used until I bought my serial port and Avatex 1200 modem from OrphanWare. The commands are simple and are displayed by using "M" for "menu". It has a built-in function key display and a built-in phone library. They are installed with the companion programs "M7Lib" and "M7fnk". The program employs Xmodem protocol using either CRC or checksum for file checking and it uses 128-byte blocks. It is usually setup to run on the ADAMlink modem by default. To recieve a file, you must first set up the system you are calling to send the file to you. Then, you must manually set your own system to receive the file by going into the COMMAND mode via a CNTL+E. Next enter ">R filename.typ". Madam7 will then do the transfer for you. It will return you to TERMINAL mode upon completion. This is a very easy-to-use program. I give it high ratings.

Mex114, by Ron Fowler, on the other hand is a very complete program with features I haven't even used yet (it is available in both the internal and external versions). Mex114 will work very similar to madam7 or it can run a script file and be fully automated. The program also comes with a help file, Mex.Hlp, and a large "doc" file. One unique feature is its cloning ability. This, with the built-in phone library and function keys, allows you to save the settings and phone numbers together -- no external program needed. Mex also as a little known feature; it will do both 128-byte and 1K downloading (use the RK Filename.Typ version for 1K). A special note here. The external version of Mex (as set up for the ADAM) currently doesn't let you switch baud rates; there are two versions available, one for 300 baud and one for 1200 baud. The original version allowed you to use either Xmodem or CompuServe type-A (CIS-A) downloading. This was automatic and a little bit faster. But about a 18 months ago, CompuServe changed their system; now Mex114 CIS-A no longer works. There is a commercial version called **Mex+** that has the CIS-A along with a few other features. Mex114 has become another favorite of mine, basically, because the program works on almost all telecom systems and BBS's without incident. Also you can set various features on the fly from the command mode. I usually turn off the bell since my terminal has a bell without a switch. This program uses the same procedure as Madam7 to download, with the single exception of using ESC vice CNTL. This is one of the all time better programs.

- continued next month -

PROGRAM EXPLANATIONS

by Solomon Swift

WE ♥ ADAM

ezMACRO

One of Ben Hinkle's ground breaking SmartBASIC patches revealed in "Hacker's Guide Volume Two" was the implementation of macros. A macro is string of characters which is input at the press of a single key. For example, press CONTROL and the "R" letter key at the same time and the word "RENAME" is printed on the screen as if you had actually typed each letter yourself. As you might guess, this innovative convenience is a coveted feature. Macros are popular in many word processors, assemblers, and BASICs.

I like Mr. Hinkle's implementation, but I thought it was time to work on an enhancement; "ezMACRO" is my solution. First, it works with SmartBASIC 1.0 and 2.0; it evens works in STDMEM or EXTMEM with the latter version of BASIC. Just enter the program and RUN it. The chart at the bottom of page 12 reveals the functions that the program sets up. CONTROL is designated by "^", "cr" stands for carriage <RETURN>, and "sp" indicates that a blank space is to be printed (after the macro string).

The program is relatively straightforward. Line numbers 100 thru 195 set up the machine code routine. This routine is a diversionary patch off the IN#0 function of BASIC. The zeros in the routine are replaced with variable values. Line numbers 200 thru 250 constitute the function keys and corresponding macro strings. Line numbers 300 thru 330 POKE the macro data into RAM. Line numbers 350 thru 390 change a few of the normal CONTROL functions to single key-presses. Line numbers 400 thru 610 do the minor changes for SmartBASIC 2.0.

You can setup your own macro keys and strings too. Just change the DATA on line numbers 200 thru 250. The format is: ASCII of key, macro string. A lower case "c" is replaced with a <RETURN> and a lower case "s" is supplanted with a blank space. You can also select the starting address in RAM for the machine code routine and the data. Set the "st" variable on line #100 to the start address that you prefer. To be able to use more than the default 16 macros, change the variable "nm%" on line #100 to your preference. Be sure to keep the limits of memory in mind when making these changes. I selected 16 macros and starting address 27407 to keep it all below address 27600; most Z80 routines written from BASIC use addresses above 27600. I hope you enjoy it.

pixFLIPPER

The program LISTed on pages 11 and 12, pixFLIPPER, performs a very useful graphics function. It will flip a hi-res screen vertically or horizontally; it will also "fold" the screen horizontally so that the left side is mirrored on the right. Because the program is mostly in BASIC it takes 30 seconds or so; but the results of this creative program are WELL WORTH the short delay.

Mr. Pitman, a college student majoring in computer programming, wrote the program for use with GraphixPAINTER or Pix.MGR. It will load either picture format and then perform the desired operation. Then you'll need to RUN one of the other two programs in order to store the results.

I was most impressed with program; in fact it inspired me to add the FLIP function to SwiftPRINT. I was curious as to why DATA statements were used rather than flipping the bits of each byte arithmethically; and I experimented. BASIC is much slower using calculations; he definitely choose the correct route. Flipping the byte is the heart of the routine; the bits of every byte of the picture are flipped and then exchanged with the byte at the opposite border.

SmartTUNES SONG

Page 13 LISTs another tune for you to use with the SmartTUNES music driver (LISTed in the NOV 87 issue). This one is particularly good. It sounds VERY MUCH like genuine organ music. I think you'll like it too. Be sure to RUN SmartTUNES first.

PowerPAINT PATCH

It has been said many times that a creative work is never completely finished. This seems to be particularly applicable to computer programs; the program on page 14 is still another patch to the topseller PowerPAINT. This one patches all the drive access routines to permit use of a third disk drive (in the light of OrphanWare's new disk drive EPROM). The second tape drive is omitted. After using this patch on a PowerPAINT "BACKUP", the drive selection is in the following sequence: tape one, disk one, disk two, disk three, RAMdrive. Type the program, RUN it, insert your PowerPAINT backup, and follow the simple instructions. More patches to come.

```
 10 REM ezMACRO (for SmartBASIC 1.0, 2.0 STDMEM, & 2.0 EXTMEM)
 11 REM a freeware contribution by DIGITAL EXPRESS
 12 REM presented in Nibbles & Bits July 1988
 13 REM Do NOT remove these five REMarks
 14 REM do NOT use st<27600 with Intel-BEST 3.3
100 LOMEM :30000: nm% = 16: st = 27407: s2% = st/256: s1% = st-256*s2%
105 vs% = 2: IF PEEK(259) = 195 THEN  vs% = 1
110 DATA 229,213,197,33,000,000,237,91,000,000,123,178,32,26
120 DATA 205,105,47,229,33,000,000,1,0,0,237,185,225,32,24
130 DATA 17,000,000,19,26,183,32,251,13,32,248,19,26,183,115
140 DATA 35,114,32,5,54,0,43,54,0,193,209,225,201
150 tt = 0: FOR x = st TO st+56: READ mc: POKE x, mc: tt = tt+mc: NEXT
160 IF tt <> 5011 THEN  PRINT: PRINT " DATA entry error!!": END
170 a1 = st+57: a2 = a1+nm%+2: FOR x = a1 TO a2+4: POKE x, 0: NEXT
175 POKE st+5, a1/256: POKE st+4, a1-256*PEEK(st+5)
180 POKE st+8, PEEK(st+4): POKE st+9, PEEK(st+5)
185 POKE st+20, a2/256: POKE st+19, a2-256*PEEK(st+20)
190 POKE st+22, nm%+1: a3 = a2+1
195 POKE st+31, a3/256: POKE st+30, a3-256*PEEK(st+31)
200 DATA 1,LISTc,2,LISTs,3,CALLs
210 DATA 4,DATAs,5,"NORMAL:",6,"INVERSE:"
220 DATA 18,RENAMEs
230 DATA 19,SAVEs,20,TEXTc,147,LOADs
240 DATA 129,RUNs,130,BRUNs,131,LOCKs
250 DATA 132,UNLOCKs,133,CATALOGs,134,DELETEs
300 a1 = a1+2: a2 = a2+3: FOR x = 1 TO nm%: READ kp%: POKE a1+x, kp%
310 READ ma$: FOR y = 1 TO LEN(ma$): ma% = ASC(MID$(ma$, y, 1))
315 IF ma% = 99 THEN  ma% = 13
316 IF ma% = 115 THEN  ma% = 32
320 POKE a2, ma%: a2 = a2+1: NEXT y
330 POKE a2, 0: a2 = a2+1: NEXT x
340 IF vs% = 2 GOTO 500
350 POKE 16134, 27: REM ^C to ESCAPE
355 POKE 16135, 144: REM ^S to WILDCARD
360 POKE 12374, 148: REM ^N to INSERT (unshifted)
365 POKE 12375, 151: REM ^O to DELETE (unshifted)
370 POKE 17302, 149: POKE 18320, 149: REM ^P to PRINT (unshifted)
380 POKE 12197, s1%: POKE 12198, s2%
390 TEXT: PRINT " SmartBASIC 1.0 detected.": PRINT: PRINT
400 PRINT " Macros are now setup.": PRINT
410 PRINT: PRINT " minimum LOMEM:"; a2
420 LOMEM :a2: END
500 ON PEEK(16789) = 255 GOTO 600: POKE 12690, s1%: POKE 12691, s2%
510 POKE st+15, 90: POKE st+16, 49: vs$ = "STDMEM"
520 POKE 1633, 27: REM ^C to ESCAPE
530 POKE 1634, 144: REM ^S to WILDCARD
540 TEXT: PRINT " BASIC 2.0 "; vs$; " detected.": PRINT: PRINT: GOTO 400
600 POKE 13214, s1%: POKE 13215, s2%
610 POKE st+15, 95: POKE st+16, 51: vs$ = "EXTMEM": GOTO 520
```

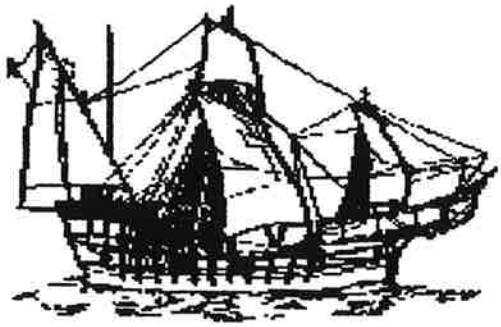
```
 10 REM *** pixFLIPPER
 20 REM *** written by Steve Pitman
 30 REM *** a freeware contribution to DIGITAL EXPRESS
 35 REM *** July 1988 issue of Nibbles & Bits
 40 LOMEM :40000: POKE 16149, 255: POKE 16150, 255
 45 DATA 1,0,10,17,0,32,33,0,116,205,26,253,201
 47 FOR x = 65520 TO 65532: READ mc: POKE x, mc: NEXT
 60 DIM a(256), b(256), p(256), c(256), d(256)
 70 IF PEEK(17000) = 2 THEN 320
 80 IF PEEK(17000) = 3 THEN  GOSUB 730: GOTO 320
 90 HOME: PRINT "You may load a Picture file."
100 VTAB 4: HTAB 7: PRINT "1-SmartPAINT"
110 VTAB 6: HTAB 7: PRINT "2-GraphixPAINTER"
120 GET k$: k = VAL(k$): IF k < 1 OR k > 2 THEN 120
130 HOME
140 IF k = 2 THEN  PRINT "leave off the c and p when": GOTO 160
150 PRINT "leave off extension (.HRP) when";
160 PRINT "entering filename."
170 VTAB 5: PRINT "<RETURN> for a CATALOG."
180 VTAB 8: INPUT "Enter filename: "; f$
190 IF f$ <> "" THEN  HGR: GOTO 220
200 HOME: PRINT CHR$(4); "catalog": PRINT: PRINT "Any Key."
210 GET k$: GOTO 130
220 IF k = 2 THEN 280
230 PRINT CHR$(4); "bload "; f$+".HRP": POKE 65525, 32: CALL 65520
240 PRINT CHR$(4); "bload "; f$+".HR2": POKE 65525, 42: CALL 65520
250 PRINT CHR$(4); "bload "; f$+".HR3": POKE 65525, 0: CALL 65520
260 PRINT CHR$(4); "bload "; f$+".HR4": POKE 65525, 10: CALL 65520
270 GOTO 320
280 PRINT CHR$(4); "bload "; f$+"c"
290 PRINT CHR$(4); "bload "; f$+"p": CALL 39890
295 IF RIGHT$(f$, 1) = "2" THEN  GOSUB 730
320 DATA 1,0,20,17,0,32,33,0,108,197,205,29,253,193
330 DATA 17,0,0,33,0,128,205,29,253,201
340 FOR x = 27600 TO 27623: READ m1: POKE x, m1: NEXT
350 DATA 1,0,20,17,0,32,33,0,108,197,205,26,253,193
360 DATA 17,0,0,33,0,128,205,26,253,201
370 FOR x = 27624 TO 27647: READ m1: POKE x, m1: NEXT
380 FOR t = 0 TO 127: READ m: p(t) = m: p(255-t) = 255-m: NEXT t
390 CALL 27600: HOME: VTAB 22: PRINT "Press Any Key": GET k$
400 TEXT: HTAB 2: PRINT "HGR FLIPPER-Screen in memory"
410 VTAB 4: HTAB 5: PRINT "[1] Flip (left-right)"
420 VTAB 6: HTAB 5: PRINT "[2] Upside Down"
430 VTAB 8: HTAB 5: PRINT "[3] Fold (from center)"
440 VTAB 10: HTAB 5: PRINT "[4] EXIT"
450 GET r$: IF VAL(r$) < 1 OR VAL(r$) > 4 THEN 450
460 r = VAL(r$): IF r = 4 THEN 510
470 HGR: CALL 27624
480 IF r = 1 THEN  x = 255: y = 0: GOTO 520
490 IF r = 3 THEN  x = 127: y = 128: GOTO 520
```

```
500 IF r = 2 THEN 600
510 HOME: PRINT "END.": END
520 HOME: PRINT "There are 20 rows...": VTAB 22: PRINT "Row:";
530 FOR h = 27648 TO 32767 STEP 256: st = h
540 rw = rw+1: VTAB 22: HTAB 5: PRINT rw
550 FOR t = st TO st+x: ct = ct+1
560 a(ct) = PEEK(t): b(ct) = PEEK(t+5120): NEXT t: ct = 0
570 FOR t = st+248 TO st+y STEP -8: FOR s = t TO t+7: ct = ct+1
580 POKE s, p(a(ct)): POKE s+5120, b(ct): NEXT s: NEXT t: ct = 0
590 CALL 27624: NEXT h: GOTO 510
600 HOME: VTAB 22: PRINT "One Moment..."
610 w = 32768
620 FOR h = 27648 TO 29952 STEP 256: st = h: w = w-256
630 FOR t = st TO st+255: ct = ct+1
640 a(ct) = PEEK(t): b(ct) = PEEK(t+5120): NEXT t: ct = 0
650 FOR t = w+255 TO w STEP -1: ct = ct+1
660 c(ct) = PEEK(t): d(ct) = PEEK(t+5120): NEXT t: ct = 0
670 FOR t = st TO st+248 STEP 8: FOR s = t TO t+7: ct = ct+1
680 POKE s, p(c(ct)): POKE s+5120, d(ct): NEXT s: NEXT t
690 ct = 0: CALL 27624
700 FOR t = w+255 TO w STEP -1: ct = ct+1
710 POKE t, p(a(ct)): POKE t+5120, b(ct): NEXT t
720 ct = 0: CALL 27624: NEXT h: GOTO 510
730 POKE 25521, 24: POKE 25522, 4: HGR
740 POKE 25521, 205: POKE 25522, 89: RETURN
750 DATA 0,128,64,192,32,160,96,224,16,144,80,208,48,176,112,240
760 DATA 8,136,72,200,40,168,104,232,24,152,88,216,56,184,120,248
770 DATA 4,132,68,196,36,164,100,228,20,148,84,212,52,180,116,244,12
780 DATA 140,76,204,44,172,108,236,28,156,92,220,60,188,124,252,2
790 DATA 130,66,194,34,162,98,226,18,146,82,210,50,178,114,242,10
800 DATA 138,74,202,42,170,106,234,26,154,90,218,58,186,122,250,6
810 DATA 134,70,198,38,166,102,230,22,150,86,214,54,182,118,246,14
820 DATA 142,78,206,46,174,110,238,30,158,94,222,62,190,126,254
```

EZMACRO

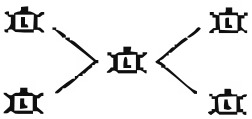
^A=LIST+cr	I =RUN+sp
^B=LIST+sp	II =BRUN+sp
^C=CALL+sp	III=LOCK+sp
^D=DATA+sp	IV=UNLOCK+sp
^E=NORMAL:	V=CATALOG+sp
^F=INVERSE:	VI=DELETE+sp
^R=RENAME+sp	^T=TEXT+cr
^S=SAVE+sp	GET=LOAD+sp

```
 100 LOMEM :32000: be = 29000
 110 PRINT " one moment please ...": PRINT
1000 REM "America The Beautiful"
1010 REM must load SmartTUNES player routine first
1020 DATA F4D4a38,a3YZ1,F4D4a38,D4a4a34,a3YZ1
1030 DATA D4a4a38,F4D4a38,F4C4C38,C4A4F34,F3YZ1
1040 DATA C4A4F38,D4a4F38,d4C4F38,F4C4F38,G4d4C48
1050 DATA A4d4C48,F4D4a48,F4D4G38,d4A4Z8,F3C4F48
1060 DATA F4D4a38,D4a4a34,a3YZ1,D4a4a38,F4D4a38
1070 DATA F4C4C38,C4A4C34,C3YZ1,C4A4C38,C5F4C38
1080 DATA a5F4C38,C5F4C38,D5d4C38,G4d4G38,C5F4F38
1090 DATA C5d4G38,C5d4A48,C5F4F38,D5F4a48,a4YZ1
1100 DATA D5F4a44,C5d4C38,a5D4D38,a5d4F38,A5d4F34,F3YZ1
1110 DATA A5d4F38,a5D4F38,C5d4F38,A5d4F38,G4d4G38
1120 DATA F4d4A48,a5D4a48,a5D4F38,a5d4G38,a5F4a38
1130 DATA a5d4d38,G4d4d34,d3YZ1,G4d4d38,a5d4d38
1140 DATA a5D4a38,F4D4a34,a3YZ1,F4D4a38,F4F3Z8
1150 DATA G4G3Z8,a5a4Z8,F4F3Z8,C5d4F38,a5D4a316
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 = 230: 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 July, 1988
  12 REM patches PowerPAINT to allow for three disk drives
 100 LOMEM :29000: rt$ = CHR$(13): ed$ = CHR$(3)
 110 DATA 62,4,1,0,0,17,40,0,33,0,108,205,243,252,50,255,107,201
 120 FOR x = 27601 TO 27618: READ mc: POKE x, mc: NEXT
 130 dv$(1) = "TAPE ONE": dv$(2) = "DISK ONE"
 200 TEXT: PRINT: PRINT " This program patches"
 210 PRINT " PowerPAINT to allow for"
 220 PRINT " three disk drives.": PRINT: PRINT
 230 PRINT " Use ONLY on a BACKUP!": VTAB 16
 300 PRINT " Which drive for PowerPAINT?": PRINT
 310 PRINT " 1 = tape one": PRINT " 2 = disk one"
 320 GET k$: 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$(13) GOTO 350
 500 HOME: PRINT " verifying ..."
 510 POKE 27602, dv%: CALL 27601
 520 IF PEEK(27647) = 128 GOTO 530
 525 PRINT " read error on block 40.": END
 530 IF PEEK(28002) = 24 GOTO 540
 535 PRINT " PowerPAINT already patched.": END
 540 IF PEEK(27985) = 62 AND PEEK(27977) = 62 GOTO 550
 545 PRINT " PowerPAINT not detected.": END
 550 HOME: PRINT " correcting ..."
 560 POKE 27978, 5: POKE 27986, 6
 565 POKE 27613, 246: CALL 27601
 670 IF PEEK(27647) = 0 GOTO 700
 680 PRINT " write error on block 40.": END
 700 POKE 27607, 39: POKE 27613, 243: CALL 27601
 710 wd$ = "disk one"+rt$: st = 27802: GOSUB 3000
 720 wd$ = "disk two"+rt$: st = 27811: GOSUB 3000
 730 wd$ = "disk 3  "+rt$: st = 27820: GOSUB 3000
 740 POKE 27613, 246: CALL 27601
 750 IF PEEK(27647) = 0 GOTO 800
 760 PRINT " write error on block 39.": END
 800 POKE 27607, 36: POKE 27613, 243: CALL 27601
 810 wd$ = "  disk"+rt$+"  one"+ed$: st = 27768: GOSUB 3000
 820 wd$ = "  disk"+rt$+"  two"+ed$: st = 27781: GOSUB 3000
 830 wd$ = "  disk"+rt$+"  3  "+ed$: st = 27794: GOSUB 3000
 840 POKE 27613, 246: CALL 27601
 850 IF PEEK(27647) = 0 GOTO 900
 860 PRINT " write error on block 36.": END
 900 POKE 27607, 28: POKE 27613, 243: CALL 27601
 910 POKE 27704, 4: POKE 27980, 4
 920 POKE 27711, 5: POKE 28004, 5
 930 POKE 27718, 6: POKE 28024, 6
 940 POKE 27613, 246: CALL 27601
 950 IF PEEK(27647) = 0 GOTO 1000
 960 PRINT " write error on block 28.": END
1000 POKE 27607, 43: POKE 27613, 243: CALL 27601
1010 POKE 27731, 4
1020 POKE 27740, 5
1030 POKE 27749, 6
1040 POKE 27613, 246: CALL 27601
1050 IF PEEK(27647) = 0 GOTO 2000
1060 PRINT " write error on block 43.": END
2000 HOME: PRINT " PowerPAINT now setup for"
2010 PRINT " three disk drives.": END
3000 le% = LEN(wd$): FOR x = 1 TO le%: POKE st-1+x, ASC(MID$(wd$, x, 1))
3010 NEXT: RETURN
```

EXPLORING SMARTLOGO



by Leonard F. Adolph

In the mid 70's I put together one of the first Altairs; the first successful personal computer. I still have the Altair, plus a Heath that was given to me which I later restored. And, of course, I have my ADAM. I have found that I enjoy orphan computers because they encourage hacking.

I had my ADAM for more than a year before I discovered that there are a lot of us. I knew from playing Buck Rogers that my ADAM was capable of more than what the SmartBASIC manual admitted to. So, naturally, I wrote a BASIC disassembler. I recently got SmartLOGO and after learning a little about LOGO, I wrote a disassembler for it also.

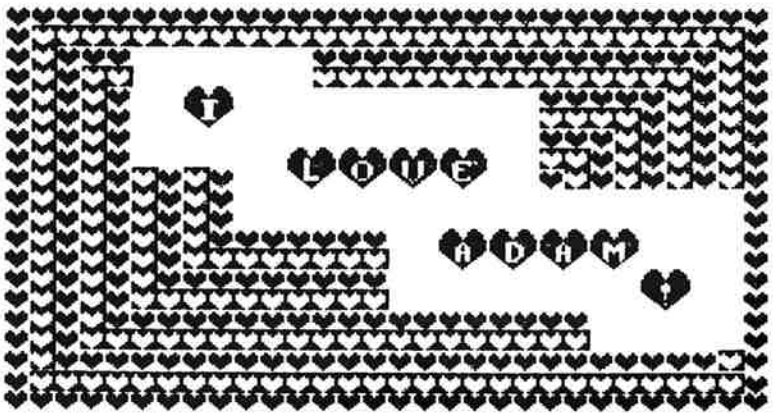
When I wrote the BASIC disassembler, I constructed op-code charts and then flow charts. With LOGO I found that I could work directly from the op-code charts! I have found LOGO to be an interesting language. I did find that LOGO doesn't have as much free memory for programs as BASIC. Thus there are a few compromises in this program. It does, however, manage to decode all documented Z80 op-codes.

To use this program (spans the next three pages) enter: DIS start end. Replace "start" and "end" with the decimal addresses that you want to use. If you'd like a printout, use the PRINTER and NOPRINTER commands. (The PD volume "N&B logo 01" has a print driver for a dot matrix printer; it will be listed in a future issue.) All inputs and outputs are decimal; there isn't enough free memory for a HEX routine. Before loading the program type ERALL RECYCLE to clear all memory.

The printed line format is:

ASCII ADDRESS BYTE MNEMONIC

An "@" means that the following mnemonic is bracketed. If an "@" is followed by a comma (,) or nothing, then the "@" means "n" or "nn", depending on whether the data on the next line is one byte or two. Index registers are identified by "IZ". "Z" is either "X" or "Y", whichever follows the page identifier on the previous line. Good luck.

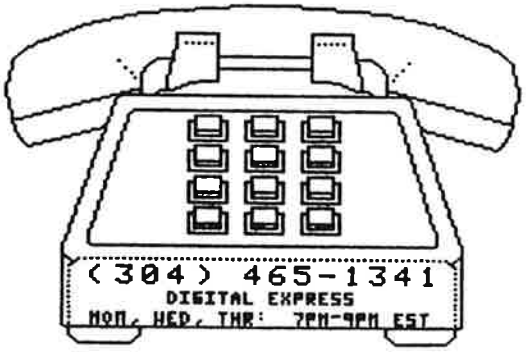


```
TO P3
PRINTLINE MAKE "MN "CB PR :MN NEXT PEEK PRINTLINE IF OR (
:SN  = 6 ) ( :SN = 14 ) [CB] [NONE STOP]
MAKE "MN WORD :MN "1@IZD
END

TO MNCENTER
IF AND ( :FN = 7 ) ( :SN = 6 ) [MAKE "MN "HALT STOP]
IF :SN < 8 [MAKE "MN [LDB, LDD, LDH, LD@HL, ADDA, SUB AND
OR] ]
IF :SN > 7 [MAKE "MN [LDC, LDE, LDL, LDA, ADCA, SBCA, XOR
CP] ]
MAKE "MN ITEM :FN - 3 :MN
END

TO NONE
MAKE "MN "?
END
```

```
TO CHECK
IF EQUALP FIRST :MN "4 [P STOP]
IF EQUALP FIRST :MN "1 [N STOP]
IF EQUALP FIRST :MN "2 [NN STOP]
IF EQUALP FIRST :MN "3 [E]
END

TO NN
REMOVE MAKE "TO :OPCODE PRINTLINE NEXT PEEK MAKE "TO :TO +
256 * :OPCODE PR :TO PRINTLINE MAKE "MN ".
END

TO N
REMOVE PRINTLINE MAKE "MN :OPCODE
END

TO DD
IF :FN = 12 [IF :SN = 11 [P3 STOP]]
IF AND ( :FN = 7 ) ( :SN = 6 ) [NONE STOP]
IF AND ( :FN = 7 ) ( :SN < 8 ) [MAKE "MN "1LD@IZD, REGS
CHECK STOP]
IF AND ( :FN > 3 ) ( :FN < 12 ) [IF OR ( :SN = 6 ) ( :SN =
14 ) [MNCENTER MAKE "MN WORD 1 WORD :MN "@IZD CHECK STOP]]
IF AND ( :FN = 15 ) ( :SN = 9 ) [MAKE "MN "LDSPIZ STOP]
IF AND ( :SN = 9 ) ( :FN < 2 ) [MAKE "MN [ADDIZ,BC ADDIZ,DE]
MAKE "MN ITEM :FN + 1 :MN STOP]
IF AND ( :FN = 14 ) ( :SN < 10 ) [MAKE "MN [? POPIZ ?
EX@SP,IZ ? PUSHIZ ? ? ? JP@IZ] MAKE "MN ITEM :SN + 1 :MN
STOP]
IF AND ( :FN = 2 ) ( :SN < 12 ) [MAKE "MN [? 2LDIZ 2LD@,IZ
INCIZ ? ? ? ? ? ADDIZ,IZ 2LDIZ@ DECIZ] MAKE "MN ITEM :SN + 1
:MN CHECK STOP]
IF :FN = 3 [IF AND ( :SN > 3 ) ( :SN < 10 ) [MAKE "MN
[1INCIZD 1DECIZD 1LD@IZD ? ? ADDIZ,SP] MAKE "MN ITEM
```

```
:SN - 3 :MN CHECK STOP]]
MAKE "MN "?
END

TO EDP
IF OR ( :FN < 4 ) ( :FN > 11 ) [NONE STOP]
IF AND ( :FN > 7 ) ( :FN < 10 ) [NONE STOP]
IF :FN < 8 [MAKE "MN [[INB,@C OUT@C,B SBCHL,BC 2LD@,BC NEG
RETN IM0 LDI,A INC,@C OUT@C,C ADCHL,BC 2LDBC,@ ? RETI ?
LDR,A] [IND,@C OUT@C,D SBCHL,DE 2LD@,DE ? ? IM1 LDA,I INE,@C
OUT@C,E ADCHL,DE 2LDDE,@ ? ? IM2 LDA,R] [INH,@C OUT@C,H
SBCHL,HL ? ? ? ? RRD INL,@C OUT@C,L ADCHL,HL ? ? ? ? RLD] [?
? SBCHL,SP 2LD@,SP ? ? ? ? INA,@C OUT@C,A ADCHL,SP 2LDBC,@ ?
? ? ?]] MAKE "MN ITEM :FN - 3 :MN PLUS STOP]
MAKE "MN [[LDI CPI INI OUTI ? ? ? ? LDD CPD IND OUTD ? ? ?
?] [LDIR CPIR INIR OTIR ? ? ? ? LDDR CPDR INDR OTDR ? ? ?
?]] MAKE "MN ITEM :FN - 9 :MN PLUS
END

TO REGS
IF :SN > 7 [MAKE "SN :SN - 8]
MAKE "REG [B C D E H L @HL A] MAKE "REG ITEM :SN + 1 :REG
MAKE "MN WORD :MN :REG
END

TO CB
IF :SN < 8 [MAKE "MN [RLC, RL, SLA, ? BIT0, BIT2, BIT4,
BIT6, RES0, RES2, RES4, RES6, SET0, SET2, SET4, SET6,]]
IF :SN > 7 [MAKE "MN [RRC, RR, SRA, SRL, BIT1, BIT3, BIT5,
BIT7, RES1, RES3, RES5, RES7, SET1, SET3, SET5, SET7,]]
MAKE "MN ITEM :FN + 1 :MN
END

TO P
REMOVE PRINTLINE IF EQUALP :MN "CB [CB REGS STOP]
IF EQUALP :MN "ED [EDP STOP]
DD
END

TO REMOVE
MAKE "MN BUTFIRST :MN PR :MN NEXT PEEK
END

TO E
REMOVE PRINTLINE IF :OPCODE < 127 [MAKE "MN :OPCODE + :START
+ 1 STOP]
MAKE "MN :START - ( 255 - :OPCODE )
END

TO PLUS
MAKE "MN ITEM :SN + 1 :MN CHECK
END

TO MNENDS
IF :FN < 4 [MAKE "MN [[NOP 2LDBC LD@BC,A INCBC INCB DECB
```

```
1LDB RLCA EXAF,AF' ADDHL,BC ADDA,@BC DECBC INCC DECC 1LDC
RRCA] [3DJNZ 2LDDE LD@DE,A INCDE INCD DECD 1LDD RLA 3JR
ADDHL,DE LDA,@DE DECDE INCE DECE 1LDE RRA] [3JRNZ 2LDHL
2LD@,HL INCHL INCH DECH 1LDH DAA 3JRZ ADDHL,HL 2LDHL,@ DECHL
INCL DECL 1LDL CPL] [3JRNC 2LDSP 2LD@,A INCSP INC@HL DEC@HL
1LD@HL SCF 3JRC ADDHL,SP 2LDA,@ DECSP INCA DECA 1LDA CCF]]
MAKE "MN ITEM :FN + 1 :MN PLUS STOP]
MAKE "MN [[RETNZ POPBC 2JPNZ 2JP 2CALLNZ PUSHBC 1ADDA RST0
RETZ RET 2JPZ 4CB 2CALLZ 2CALL 1ADCA RST8] [RETNC POPDE
2JPNC 1OUT@,A 2CALLNC PUSHDE 1SUB RST16 RETC EXX 2JPC 1INA,@
2CALLC 4DDX 1SBCA RST24] [RETPO POPHL 2JPPO EX@SP,HL 2CALLPO
PUSHHL 1AND RST32 RETPE JP@HL 2JPPE EXDE,HL 2CALLPE 4ED 1XOR
RST40] [RETP POPAF 2JPP DI 2CALLP PUSHAF 1OR RST48 RETM
LDSP,HL 2JPM EI 2CALLM 4FDY 1CP RST56]]
MAKE "MN ITEM :FN - 11 :MN PLUS
END

TO NEXT
MAKE "LENGTH :LENGTH - 1 MAKE "START 1 + :START
END

TO MN
IF AND ( :FN > 3 ) ( :FN < 12 ) [MNCENTER REGS STOP]
MNENDS
END

TO PRINTLINE
IF NOT :OPCODE = 13 [TYPE CHAR :OPCODE]
MAKE "LAST LAST CURSOR MAKE "FIRST 8 - COUNT :START
SETCURSOR LIST :FIRST :LAST TYPE :START REPEAT ( 4 - COUNT
:OPCODE ) [TYPE "0] TYPE :OPCODE TYPE "0
END

TO PEEK
MAKE "OPCODE .EXAMINE :START MAKE "FN INT QUOTIENT :OPCODE
16 MAKE "SN REMAINDER :OPCODE 16
END

TO DECIDE
IF :LENGTH < 1 [STOP]
PEEK PRINTLINE MN PR :MN NEXT DECIDE
END

TO DIS :START :LENGTH
DECIDE
END
```



ADVANCED PROGRAMMING

by Solomon Swift

PART 2

This is the second installment of my "official tutorial" on programming in machine code on ADAM. We only had three dozen people send in the answers to last months's progress report. But sales of the reference guides mentioned were much greater than usual; thus I'd guess that many more of you are interested and you just didn't want to send in the answers. I do strongly recommend that you do this. Writing down the answers reinforces the learning process and sending them to me helps us both in understanding. Again, ANYONE may participate; there is no need to be concerned about not knowing an answer. We all have special talents and varying degrees of understanding about any one particular subject; I hope to see more responses this month.

PROGRESS REPORT #1

For the most part, scores were VERY GOOD last month. Either most of you already knew the answers or I'm doing a good job at this -- not certain which yet. But over the course of months, I think that you'll be quite capable of writing your own Z80 routines and programs (a program is just a conglomeration of related routines).

The "A" register, accumulator, and the "C" register may not be combined. "C" is paired with the "B" register. The accumulator is paired with the "F", flags, register. We'll discuss this useful one later.

The most commonly missed question was #5. The primary component of IMMEDIATE ADDRESSING is that the NEXT BYTE (or two) in RAM is acted upon. LoaDing a value into a register (or pair) is just one example of immediate addressing. There are many others; but the key point is that the next address is the one that the operation is performed on. There are also several other forms of addressing. We discuss addressing so that you get an idea of the different types of reading, writing, and acting upon data.

Remember when working with high and low order bytes (data pointers) that the low order byte is first in RAM; the high order byte follows it. The high order byte represents a value greater than face value (x 256). We do not necessarily have to refer to an address when LoaDing a double byte value into a register pair (BC, DE, or HL).

LESSON TWO

Moreover, there is generally more than one way of performing any given task in programming; particularly in Z80 programming. Consider this operation: LD BC, 16953. (Remember we're using decimal numbers for ease of understanding by all.) You could accomplish this with either of the following.

```
6,66,14,57

14,57,6,66

1,57,66
```

The first two are essentially identical; the same amount of memory is used and the execution time is the same. The third, however, is much more efficient. Keep two points in mind, though. LoaDing a double byte value does NOT mean that the value must be an address pointer; it can also be a faster and more conservative for setting up two independent registers. Also NOTE THAT the sequence in memory is: low order, high order.

As you get more involved with Z80, you realize that there are more commands in support of the accumulator and the HL pair. For this reason, you'll most often employ them vice another register or pair.

Another form of gathering data is called INDIRECT ADDRESSING. Here the double byte value always refers to a specific memory address. Here are some examples of INDIRECT ADDRESSING.

```
58, 57, 66
50, 57, 66
42, 57, 66
34, 57, 66
```

Each of these uses address 16953 for the indirect reference. The first one LoaDs the value already at 16953 into the accumulator. The second one stores the value currently in the accumulator into address 16953. The third one loads the value at address 16953 into the "L" register and the value at address 16954 into the "H" register. The last one LoaDs the value currently in the "L" register into address 16953 and LoaDs the value currently in the "H" register into address 16954.

To indicate an indirect address in assembly mnemonics, the address is enclosed in parentheses. And, remember that data is passed from the right of the comma (the source) to the left (the destination). Consider these:

```
LD A, (nnnn)    = 58,lo,hi
LD (nnnn), A    = 50,lo,hi
LD HL, (nnnn)   = 42,lo,hi
LD (nnnn), HL   = 34,lo,hi
```

Again, there are many other examples of this form of addressing. We are just starting here to have something tangible to work with.

SCREEN COLOR ROUTINE

Last month our EXTRA FOR EXPERTS challenge was to write a machine code routine to change the background, NORMAL, and INVERSE colors on a TEXT screen without clearing the screen. The following is one solution. We'll discuss how VRAM works later. The important aspect at this point is understanding the rationships between the registers and RAM.

```
10 REM simple TEXT color change demo
100 LOMEM:27648
110 POKE 17059,4: POKE 17115,23
115 POKE 17126,246
120 DATA 6,7,14,12,205,32,253
130 DATA 62,27,33,0,32,17,16,0,205,30,253
140 DATA 62,19,33,16,32,17,16,0
150 DATA 205,30,253,201
160 FOR x = 27600 to 27629
170 READ mc: POKE x, mc: NEXT
200 TEXT:PRINT " NORMAL":VTAB 4
210 INVERSE:PRINT " INVERSE": NORMAL
220 GET k$: CALL 27600: END
```

Enter the demo and RUN it. Tap any key and the colors will instantly change. Study this along with the details presented with the question last month.

The second progress report is in the next column. Be sure to send in your answers. And, don't hesitate to ask if you're uncertain regarding some aspect.

PROGRESS REPORT #2

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 compicated), write them down and send them in. This is an important part of the educational process (both for you and for me).

1. What is meant by IMMEDIATE ADDRESSING?

2. Which value comes first in RAM with a data pointer, the high order or the low order byte?

3. How much greater than face value is a high order byte (in a data pointer)?

4. Are all double byte pairs address pointers?

5. What is another word for the "A" register?

6. What is the combining register for "A"?

7. What is meant by INDIRECT ADDRESSING?

8. What puctuation is used in assembly mnemonics to designate an indirect address reference?

9. Write a short Z80 routine using BASIC DATA and POKE statements which will LoaD a "247" into the accumulator and then put the value into address 65447. Be sure to end the routine with a 201 (Z80 for RETurn).

10. Rewrite the program in the left column (EXTRA FOR EXPERTS) so that the Z80 routine uses one byte less and still accomplishes the same task. FIVE BONUS POINTS if you can do it with two bytes less.

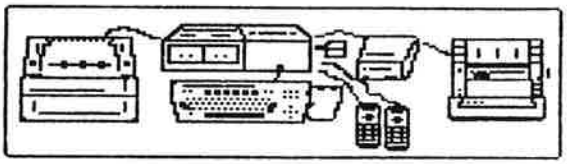
11. Convert the following to low/high order pairs. Show your calculations.

    17293
    65392
    193
    256
    0

12. Convert the following low/high order pairs to integer addresses. Show your calculations.

    255,255
    0,1
    47,252
    5,0
    111,111

PRODUCT REVIEWS



REVIEW of MEGACOPY

by Mel Ostler

I'm sure that many N&B subscribers have purchased the the MEGACOPY hardware/software package from TRISYD VIDEO GAMES. I have just completed a series of correspondence with the inventor, Syd Carter, and I want to share this experience with the other members.

I purchased the Megacopy in January of 1988, long after the first production unit was placed on the market. In fact, I waited so long to order that Syd had made a major revision; I received the latest, blue switch box version.

I was impressed when I first received a letter from Syd two summers ago when he announced that the project was well underway. Of all the hangups we orphan's faced, this was the worst: to have very capable high-speed digital drives and not to be able to replace the formatted tapes as they wore out, which eventually has to happen. Even with due respect to those third party manufacturers of fine replacement tapes, there is nothing like an 'orphan' being able to take care of himself.

I was no less impressed with the fact that Syd did finish the project, and that he marketed the product as scheduled, and that he then received very favorable reviews. Not having purchased a unit until much later I, like many others, had to rely heavily on the accuracy of the reviews.

I was impressed when I received the product, both by its physical appearance and by the obvious hard work and long hours that the product had required. The approach of using tape one to drive tape two was clear enough in theory; but the study, research and experimentation required to perform the feat is still staggering to me as I consider the small financial renumeration that Syd can expect to receive for the very limited market potential available to him. This, in addition to the obviously long hours required to decipher the OS7 operating system (which he employs in his software), were enough indication to me that this man is hard working and dedicated to the ADAM.

Accordingly, when I ran into problems on the rewind portion of the program I didn't hesitate to call him. The nature of the development of the product, as I have explained above, gave me the assurance that I would find a person to talk to on the other end who really cared about the product and my satisfaction with it. I was in no way disappointed. Syd was very cordial, and asked me to send the tape back for a revision. In the meantime he had me make a copy, and switch two names in the directory so that I could use the old version to make tapes until he could get the problem worked out. Syd made one revision which solved one problem. Then I encountered another, and he revised it again. I sent him the tape and a careful delineatioin as it appeared to me. I sent problems to him three times.

Two things have left me even more deeply impressed than I was previously. The first is that Syd doesn't ever quit trying to make the product better for the user. When the first units were sold, the user had to do two physical switchings of the little switch box. This is not a big deal, but it did require some attending to. When I received my unit Syd had the process down to one switching. By the time that Syd sent this final revision he had placed a checking function as the blocks were numbered, to make sure that the blocks were properly numbered as the program caused the numbers to be written. This is displayed on the screen for the convenience of the user.

The second thing, which I like most of all, is the feeling of reliability that I have about this latest version. I have made about fifty standard tapes and about a dozen of varying formats since getting this device. I've got so much confidence in the new version that I just set it up, and do something else while it works. It is, indeed, a smooth operation.

I think the ADAM community owes Syd Carter a vote of thanks for a truly professional job on a very fine devise; he certainly has it from me. This is the device which Coleco should have provided for ADAM purchasers right from the beginning. Every ADAM owner should have one now that it is available. TRISYD VIDEO GAMES 26 Florence Crescent Toronto, Ontario CANADA M6N 1E4

PRODUCT:	File Manager 2.1
MANUFACTURER:	AJM SOFTWARE
MEDIA TYPE:	disk/DDP
GRAPHICS/SOUND/DESIGN:	92;n/a;97
INSTRUCTIONS:	97
USEFULNESS vs. PRICE:	99
RECOMMENDATION:	HIGHLY RECOMMENDED
PRICE:	16.95
RATED BY:	Solomon Swift

As with any computer, media utilities abound for the ADAM. With so many, why should we even consider adding anohter to our software library?

This is a package that you'll find many uses for. It is, in my opinion, the most versatile media management program written for our system. And, it is done completely in super fast machine code. Some of its features are common to other utilities, but many are quite unique for the ADAM.

File Manager has ten central functions; each one has a variety of support features, controls, and functions. And the program is one that will grow with you as you expand your system. It supports 160K, 320K, and 720K disk drives. And it supports any size of OrphanWare compatible memory expansion card (64K, 256K, and 512K). Additionally, you may customize default screen colors and startup drives.

You may COPY FILES one at a time or in marked groups to the same or different drives. You may DELETE FILES with the same options. And you can PRINT FILES in the same manner; you choose between the ADAM printer or a standard dot matrix. For printing you can select the line width, left margin, and a type of page break. Plus, you can choose form feed or cut sheet, single or double spacing, and draft or letter quality (for a DMP).

File Manager's BACKUP option uses the "smart" process of reading the directory and calculating the number of block to backup. For Super Games and CP/M media it copies all available blocks. You can also COPY BLOCKS. With this option you may copy one or multiple blocks. You can even move them around to change the sequence from the source to the target media. Another feature is the capability to EDIT BLOCKS. Block editor's are fairly common; but one super nice feature here is that you can edit in HEX or ASCII. With the ASCII option you just type in the replacement text.

Another useful function is the KRUNCH feature. This automatically edits a directory and relocates files to completely remove DELETEd files. As most of us experienced ADAM owners are aware, DELETEd files can devour a directory. File Manager fixes this problem ... fast.

The package includes options to FORMAT disks. It will work with any size, and you may format one or two disks simultaneously. You may also INITIALIZE the directory on any medium.

Included also is a powerful DIRECTORY EDIT function. You can rename, lock, delete, and UNdelete files. In fact, you can completely edit the attribute byte for any directory entry, eg, change to system, lock, unlock, read protect, etc. You can also edit the entire 26 bytes of file information for any entry -- with ease. And, you can delete files starting at any particular file entry.

I believe that anyone, even a novice, would be well pleased with this powerful combination of utilities by AJM SOFTWARE. As with SpeedyWRITE, which I reviewed last month, there are no graphics to speak of. What you get is a POWERHOUSE of a package ... and at a VERY reasonable price. With full-featured programs written in fast machine code such as File Manager, PowerPAINT, and SpeedyWRITE, the ADAM will be a viable, productive system for MANY years to come. File Manager is a program that you will USE.

REVIEW of SwiftBASIC 80

by Ron Collins (president of N.O.A.H.)

With all the talk abounding lately regarding copy protection schemes and such, I was worried about the future of our little computer. My greatest fear was that new software and hardware innovations would drop by the wayside in fear of copyright violations. This would end the resources we currently have as our sole support for an already orphaned computer system. Even Coleco seems to be in danger of slipping quietly out of existence. I can't help wondering if things would have been different in the final outcome if Coleco had maintained its support for our wonderful machine ... but that's another story.

I am quite excited to see a single piece of software that can, in and of itself, revolutionize and revitalize the use of the Coleco Adam Computer System! Pretty good trick, don't you think? Recently, there was a meeting of four of the five SYSOPS on the Orphanware Business System's BBS to discuss using SmartBASIC with an 80 column display. What came out of that meeting, a short (now freeware) program to access the OrphanWare 80 CVU in a limited range, has now evolved into what I consider to be Dr. Swift's greatest contribution to the future of the ADAM! SwiftBASIC 80 (version 2.1) will completely change the way we program in BASIC.

I like CP/M software, but I've never been able to program in it due to my limitations in understanding how it works. BASIC, on the other hand, has always been a comfortable language to work with. You can see what you are doing in ENGLISH! The only thing that I didn't like was using up two or more screen lines to display a single line of programming. The screen became filled and confusing before I could complete any complex programming. There is also the fun and excitement of typing in programs others have written for the ADAM. This isn't too hard, but it can be very confusing to see a line of numbers broken up (did I type the whole number??). In this way, I've placed too many numbers in a data string more times than I care to count.

SwiftBASIC 80 eliminates my problems with SmartBASIC. This program does all the things that my modified CP/M system does for me. At boot time, SwiftBASIC will search for a memory expansion board. If a board is found, it will be initialized as a RAMdrive (d7) and sized correctly. The next thing SwiftBASIC did was to allow me to set the time on my CLOCK (run off the video chip). All this is being done in 80 columns! I found other unexpected features as I began to explore my new treasure. Dr. Swift has set the software to patch EOS for a four disk drive system. Now I can use four disk drives, two digital data drives, a RAMdrive; and even a CLOCK with 80 columns under Smart (Swift) BASIC.

A few notes about the language itself. As far as I can tell, this implementation of SmartBASIC has a wealth of features to make programming as simple and painless as possible. Besides those previously mentioned, Dr. Swift has added a large array of MACROs to the system. For instance, to do a program listing, just type ^A (LIST will be printed and a carriage RETURN used). To terminate a running program, just hit the ESCAPE key. There are many more of these type features too. In addition, you can use the cursor control keys (arrows) to move around the screen. And you can INVERSE video! A good use of the inverse video can be seen in his latest version of "EZFileXFER". This copy program allows you to move files around the same as its predecessor, but this is clear and concise utilizing the full 80 column screen with inverse bars to separate various items on the screen.

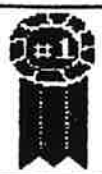
I hope you don't think that's all! You can still RUN (or BRUN) your favorite HELLO program as a turnkey. Will the program work on a larger capacity disk? The answer is YES! Dr. Swift even set the program to display the CATALOG in two columns. The documentation tells how to INIT a disk for different size directories and disk size values. The two column CATALOG feature is especially useful on 720K disks where over 100 files can easily be stored! Try reading a big catalog with the standard display!

For the future, I am confident that Dr. Swift will continue to revise the software to allow the full screen line editing and possibly even some graphics. These are not fully implemented at present but I understand great things are in store! Just imagine a revision to such fine software programs as MultiWRITE by Strategic Software or the upcoming GoWRITER from DEI!

Move over WordSTAR! Don't get me wrong, I happen to LOVE WordSTAR. But every time I do a review, I have to filter the document and then convert it from a CP/M to an EOS file so that SmartWriter can use it. My hope is for an 80 column word processor that runs under EOS. This will allow us to print our documents and edit them if needed by SmartWriter. The savings in time alone will be worth the investment.

I understand that a new version of the OrphanWare 80 CVU may be upcoming, along with a fuller featured printer interface. This leaves only the software to be modified, and Dr. Swift is just the man to do it!

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 PaintMASTER). 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).

PD SOFTWARE

N&Bpix 20, 21, 22, & 23
PaintMATES 05, 06, & 07
PaintFORMS 03
Astrology (by Ruth Mather -- great graphics)
PrintPATCH (DMP patches for several Strategic Software packages)
Z80 PROGRAMMER (1 & 2) requires CP/M 2.2
Guy's Games (self-booting by Guy Cousineau)
Guy's Utils (large variety by Guy Cousineau)
Media Editor (three great media editor utilities)
Bowling Diary (by Hector Sanchez)
ADAM FB Analyzer (by Hector Sanchez)

COLECO PRODUCTS

"ADAMlink modem" just $29.95
"Smart Letters & Forms" just $10 on DDP or disk
"Richard Scarry Word Book" just $10 on DDP
"Super Zaxxon" just $9.95 on DDP
"Super Action Controllers" with Baseball cart just $39
"Roller Controller" with Slither cart just $29
"Steering Module" with Turbo just $39
"Two Black Controllers" just $5.95

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) $18.95 (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 tool 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 martrix printer for hardcopies; fully compatible with SmartPAINT; you can easily UNDO changes

MISCELLANEOUS SUPPLIES

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

□□□ plain label digital data packs — $19.95 (retail--for 10) $17.95 (SDP--for 10) — $3.45 (retail--each) $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) $4.25 (SDP--for 10) — $.79 (retail--each) $.49 (SDP--each)
* double-sided; double density; includes envelope and write protect tabs

□□□ printer ribbons for SmartWRITER printer — $15.95 (retail--for 3) $14.45 (SDP--for 3) — $5.75 (retail--each) $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) $3.95 (SDP--for 1000) — $2.95 (retail--for 500) $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) $7.95 (SDP--for 1000) — $6.95 (retail--for 500) $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 AUGust 15, 1988.

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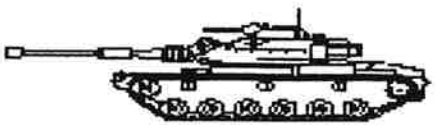
CLIP ART
from: PaintMATES05

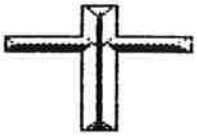






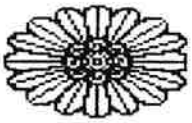












Public Domain Software Info

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 023): 13 screen pictures each.
Art Gallery (volumes 1 & 2, compiled by READY SOFTWARE): 13 screen pix each.
PaintMATES (vol 1 - 7): 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 utilities for advanced programmers.

MISCELLANEOUS COLLECTIONS LIBRARY

MWplus01: a collection of improvements to MultiWrite (required); by Jim Guenzel.
N&Bacalc01: several paradigm and other files; 140K; 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.

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