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Educational applications seem to be the newest frontier in micro's and, judging from the number of new companies I saw at the San Francisco show, the competition will be hot and heavy.

Last year at the San Francisco show, I noticed a company that was manufacturing a "Cluster" disk system...enabling four or five systems to run from one central disk drive. I don't know what happened to the first company, but Corvus Systems was marketing a similar system this year.

In this issue you will read a fascinating article by Michael Potts who has written a program for youngsters based on the Montessori method. He submitted a disk along with his manuscript and I found myself playing with it for hours. CAI is establishing a stronghold in the educational structure...but I still wonder if the youngster will be able to think independently when it is required. My doubts are most probably unfounded as my daughter is a product of the CAI system, and I haven't been able to put one over on her yet...and oh! how I've tried!! I usually end up with "Oh, daddy!...that's dumb!" Maybe I missed something along the way.

San Francisco...Again

With all of the chatter about shows from some distinguished publishers, (and some not-so distinguished), the 5th West Coast Computer Faire gave the show arena a shot in the arm that it needed very badly. I had the feeling that many of the companies were trying the SF show as a last-ditch effort before giving up the show circuit...and what a pleasant surprise was in store for all. The results of SF have now provided other managers with an atmosphere of success that will attract many more companies that otherwise would have stayed home.

Neil Otto, of Otto Electronics and MITA, was mentioning the possibility of three MITA-sponsored shows, one each on the West coast, Midwest, and the East. It makes a very nice package for the potential exhibitor...providing all the necessary exposure.

Welcome Rich Richmond

We recently welcomed Richard Richmond of Beverly, Massachusetts, aboard as our Ramworks Manager. After holding positions with various newspapers and Warner Communications, Rich has acquired an extensive background in marketing and advertising. Rich is a graduate of Eisenhower College in New York; he is completing his MBA at Suffolk University in Boston.

Farewell

The May issue of "The S-8ighty" will be the last one in which I will be listed as the Editor. I am going to be leaving SoftSide Publications for a position with an advertising agency in Boston where I will be serving the computer community as an Account Executive representing a large computer magazine throughout New England.

"The S-8ighty" has touched upon an area that vastly needed exposure and, in my opinion, has done the computerist and the industry a great service. I am referring, of course, to the person seeking to learn the basic fundamentals, and being able to do so without buying a technical dictionary. We have received many letters from people involved in all segments of business and industry; the most frequent request was "Tell us what we can do with the computer to help us professionally!". This we have attempted to do, and, I believe, have succeeded quite nicely.

It has always seemed to me that the magazines which bragged about being for the beginner started off way over the novice's head. It makes good business sense to cultivate this group, and bring them along so that they will be potential customers as the industry and technology grow. Industry " heavies" seem to have ignored this group...it seems more fashionable to discuss CP/M* and PASCAL* and interest only a fraction of the audience and lose the rest.

COVER STORY

Our special thanks to Jaime Palmer of Milford, New Hampshire. She is our cover model—a great example of our future programming generation.

Cover photograph by Elaine Cheever.
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7. Enter Level II BASIC's command mode and use all functions that do not use variables
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You may return to EDTASM after using any of the above features. The text buffer stays intact for options 1-7.

ASPTCH also has its own unique keyboard routine that may be reinitialized after entering fully programmable BASIC (it speeds up BASIC execution).

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ASPTCH requires TRS-80 Level II, 16K and up and is used with Radio Shack's Editor/Assembler 1.2.

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Continued on page 27...
The easiest and most entertaining way to learn to program is by entering games into your computer. You get to see how other programmers accomplish certain tasks, gain experience with new BASIC instructions, and the reward of playing the game when you finish serves as constant encouragement.

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Our games are very good. Many of the games we have published have sold individually for $8, $10, or even $15 each! One issue is normally worth the price of a years subscription for the game value alone.

For example, our May issue of the S-80 Edition for the TRS-80 and Video Genie computers is a special Star Trek issue. We include two complete Star Trek games, including one for which over 2000 people paid $14.95 each. We include 8K of remark statements not included in the commercial version so you can understand how it works and make your own modifications. There is a ten page article and flight manual lavishly illustrated with examples from the actual play of the game. You can even subscribe on cassette or diskette if you don't want to type in the line listings. The game issue also includes an article on Star Trek, the Motion Picture, including five programs developed on a 4K Level I TRS-80 to be used as displays in the movie! Another program included is an uncopyrighted day of the week routine that you can use in your own programs.

The May issue of our Apple Edition includes a high speed, colorful, challenging version of the space invaders game that is so popular in the arcades. Other features include the second installment of the book, "Intimate Instructions in Integer BASIC", Right/Left — a game for very young children, Small Marquee — a word guessing game, Black Box — a game of deduction, Magic Cave — a game seeking treasure in a hazardous dungeon, plus a disk catalog program and a method for protecting your program against copying.

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yourself, or 3) "THE PATCH".

To make choices 1 and 2 operate requires using software
overhead in the form of a "driver". This takes 30 bytes,
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If you have run into either or both of these problems (and if you own Radio Shack drives I know you have), then here's a review you should read.

Two companies are now selling flexible disk reinforcing kits.

Both kits are based upon the same idea (see illustration). You take the centering tool, either metal or plastic, and place it on a level surface. Place a diskette on top of the centering tool. Since the diskette will just barely fit over the center protuberance of the tool, it cannot slide around. Then take a small plastic ring and remove the backing from it to expose the sticky side. Place the sticky side of the ring down on the diskette. The centering tool will align the ring properly for you. After this, take the pressure tool and press it down on the plastic ring. Turn the pressure tool back and forth, forcing out any air bubbles left under the plastic. The result is a stronger, more durable diskette.

The kits are so simple, they're almost impossible to mess up.

The first product is called 'The Fortifier' and is available from INMAC, Sunnyvale, CA (prod. #7955). The Fortifier is made of metal and retails for $24.95. It comes complete with two sizes of rings, one for mini-floppies, and the other for 8" floppies. There are two dozen rings of each size in the kit.

The second kit is called 'Mini Floppy Disc Saver' and is made by the Tristar Corp., P.O. Box 1727, Grand Junction, CO 81501. This is the less expensive of the two kits, costing only $14.95. It is made of plastic and it too comes with two dozen rings, but they are for mini-floppies only.

As far as replacement rings are concerned, I don't know. Neither company included any information on ordering additional rings. A bad oversight on their part.

If you have disk drives, I strongly suggest that you purchase one of these two kits; if you have a friend who owns 8" drives (or anticipate getting them in the future), then get the INMAC kit and split the cost with the friend. Otherwise, get the 'Floppy Saver' kit.
Board Games-1, CS-3001 (16K)

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  Mugwump is a board game which uses a 10x10 grid on which four friendly Mugwumps are hiding. Your mission is to locate these mysterious animals and capture them.

- Flip Disc
  Are you an Othello freak? Flip Disc is a program which will turn your computer into an excellent opponent. Three different skill levels, (good, expert, and genius), provide an introduction for the novice and continuing interest for the experienced player.

- Wumpus
  In game 1, you scour a network of underground caves in search of the prized Wumpus. Bagging a Wumpus wins the game, but if you accidentally stumble into his cave, the Wumpus will enjoy a tasty dinner of sauteed computer freak.

- Wumpus 2
  If you master the dodecahedron cave network in Wumpus 1, you may proceed to Wumpus 2 which allows you to choose from five different caves, or you can design your own.

- Qubic
  Qubic is a three dimensional Tic Tac Toe game. The game is played in a 3 dimensional cube (4x4x4). The object is to outwit the computer and place four pieces in any straight line.

- Backgammon
  This is the TRS-80 adaptation of the popular board game. Backgammon uses graphics and all the standard backgammon rules, not a strange computer variation. The computer is your opponent in this version, written by Scott Adams of "Adventure" fame.

Space Games-3, CS-3002 (16K)

- Ultra-Trek $7.95
  Ultra-Trek is a fast-paced version of Star Trek, complete with "real time" action graphics, lasers, Nilon space mines, high energy photon torpedoes, enemy ships that move, and an experimental ray which does something different each time you use it. You must act quickly to save yourself and the Federation.

- Star Lanes
  Imagine yourself the president of an intergalactic shipping company. If you're successful, you may be named Imperial Advisor on Economic Affairs. Entrepreneurs: to your ships.

- Star Wars
  If you hate Darth Vader, you'll love Star Wars. This real time game is fun for aliens of all ages. May the Force be with you!

- Romulan
  Your mission is to destroy an invading Romulan space craft. Maneuver through space and around stars looking for the deadly enemy, but be careful! The nasty Romulans fire back.

Air Traffic Controller, CS-3006 (16K) $7.95

This real time machine language program puts you in the chair of an air traffic controller. There are 27 airplanes -- jets and prop planes -- which must be controlled as they land, take off and fly over your air space. You give the orders to change altitude, turn, maintain a holding pattern, clear for approach, and land at your two airports. This realistic simulation includes navigational beacons, and requires planes to take off and land into the wind. Air Traffic Controller was written by an air traffic controller and is a favorite of the Creative Computing staff!

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SIMPLE PEEK/POKE ROUTINE FOR THE TRS-80 MODEL II

by Peter B. Zieger

I got my March issue of the OCTUG Newsletter and read Martell B. Royer's excellent article on the PEEK and POKE for the TRS-80 Model II. To him I owe for all the inspiration that led to this article.

The following is one method for PEEK and POKE that is very close to the original TRS-80 Model I notation. It does not use any strings, and any variables passed to it are not destroyed by the subroutine.

The assembled 32-byte subroutine is initially keyed into memory with the use of the debug utility under TRSDOS as follows:

1) DEBUG ON <ENTER Key>
2) DEBUG <ENTER Key>
3) M
4) F2E0
5) <F1 Key>
6) 5E 23 ... EA
7) <F2 Key>
8) S

Next to save the subroutine on disk, key in the following:

DUMP PEEKPOKE/CMD START=F2E0,END=F2FF,RORT=R <ENTER Key>

Load BASIC with a memory protect of 32 by keying:

BASIC -M:62175 <ENTER Key>

In the calling BASIC program, key the following lines:

10 SYSTEM "PEEKPOKE/CMD"
20 DEFUSR=+HF2E0
30 DEFUSR=+HF2F0
40 DEF FNPEEK(ADDR%)=USRB(ADDR%)
50 DEF FNPOKE(ADDR%,BYTE%)=FNPEEK(ADDR%)*0-USRB(BYTE%)

To implement either of the PEEK or POKE calls, just simply use FNPEEK(a) or FNPOKE(a,v) any place you could have used a PEEK on a TRS-80 Model I. For example:

?FNPEEK(&H2800) would print the contents of H2800
A=FNPOKE(64,255) would poke address 64 with 255

To demonstrate the use of this technique, key in the following additional lines and RUN, and you'll get a formatted dump of memory starting at H0000. (Note line 0040 of the dump changes on repeated runs; this is where the real-time clock is located in memory.)

60 IFA MOD16 <> 0 GOTO100
70 PRINTB$: B$="": A$=HEX(A)
80 IFL(AS) <> 4 THEN A$="0:"+A$: GOTO80
90 PRINTAS:"":"
100 B$=FNPEEK(VA1(&H)+HEX%(A))"
110 A$+CHR%(B): IFN <32 OR B > 127 THEN A$=""
120 B$=B$+A$: A1=HEX%(B): IFL%(A)+1 THEN A$="0:"+A$
130 PRINTAS:"": A=A1: GOTO60

00100 ; SIMPLE PEEK AND POKE SUBROUTINE
00110 ; BY PETER B. ZIEGER
00120 ; MICRO-SERV
00130 ; RT 8 BOX 416
00140 ; SALISBURY, MD 21801
00150 ; (301) 742-8223
00160 ;
00170 ; PUBLIC DOMAIN SOFTWARE
00180 ;
00190 ;

F2E0 00200 0F2E0H
F2E0 00210 PEEK LD E,(HL) ;LOAD PEEK
F2E1 00220 INC HL ;ADDRESS
F2E2 00230 LD D,(HL) ;TO DE REG
F2E3 00240 EX DE,HL ;SWAP ADDRESS TO HL
Note: This subroutine is almost relocatable, if you move it you will have to adjust lines 00250 and 00320 to point to the storage address at line 00390.

---

**PATCH TO TRS-80 DEBUG (TRSDOS 1.2) TO ALLOW ACCESS BELOW H2800**

Using DEBUG as described in previous article load into memory the following routine:

```
F200 210000 2236F9 2205FA 21FFFE 2241F9 220DFA D7
```

Dump it to disk by keying in the following:

```
DUMP FIXDEBUG START=F200,END=F212,RORT=R <ENTER Key>
```

To use key the following:

1) DEBUG ON :enter debug mode
2) FIXDEBUG :load routine
3) J :enter jump mode
4) F200 :execution address

DEBUG has now been modified in memory (not on disk) and you may now look down in previously protected areas.

---

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Because of the preponderance of games, especially mathematical ones, computerists and Computer-Aided-Instruction are criticized for frivolity and shallowness in educational circles (at least the ones I run in). Simultaneously, the fact that the "TV generation" borders on functional illiteracy receives attention in the game circles. Good teaching programs, especially "humanistic" ones, dealing with language rather than mathematics, can use the machine to redress the grievance.

I think it's time to write some teaching programs that set out to explore the joys of computer learning for youngsters as cold-bloodedly, say, as the authors of the DEC PDP-10 "Adventure" set out to explore the joys of artificial intelligence. The idea is to invite the child on an adventure into her own mind, with the computer cast as Sancho Panza.

Computers (because they're fast idiots) and the Level II TRS-80's (because of their string-handling abilities in BASIC) are perfect for teaching English. The computer's attentive, immediate, focused feedback contrasts nicely with the absent-minded aspect we all too often present to our children. The natural magnetism of the CRT — it's OK to steal a little juice from the "idiom box" if we do it consciously — coincides with the young (aged 4 to 6) child's natural hunger for expression. One of my culture-heroes, Maria Montessori, called it "the sensitive period" for language. Many children, upon discovering that the computer is benign, permitting them to punch buttons to their hearts' content, delight themselves for long periods punching in nonsense lines like "GHBNNNNTTULLLLK" enter "," to which the machine patiently replies, "SYNTAX ERROR". "Look what I made," they crow. Montessori asserted that writing precedes reading — most children will be building words before they can read them. The computer's display is a speedy and responsive adjunct to the painful process of handwriting.

Let me lead you through a favorite program of mine, and show you what I mean.

SECTION 2
—The Montessori framework—

Language doesn't start at a level accessible to the computer; there's some foundation work that has to be done first. Like any complex task, a grasp of the "program" makes the progress toward the goal — independence, remember? — orderly. A short review of how we learn to write and read might be in order. (Readers with knowledge of the Montessori reading material might want to skip this section.)

The 3-Period Lesson is a general Montessori tool which adapts well to computer-aided instruction. It's a structured technique for introducing any new material to the child; the obvious benefit is that the structure itself is familiar and doesn't detract from the new material. It goes like this: You plunk down at a table with a kid who doesn't know any letters. Out of your pocket you produce two tablets, one emblazoned with an "M" and the other with a "S".

"Would you like to know what these say?" you ask innocently. (If she says no, find another victim — force will never do.) Answered affirmatively, you

---

ONE CLAP

a CAI program for writing and reading

by Michael Potts

Two educational principles impress me more and more with time. One: Independence is the goal. Two: the Microcomputer is the greatest educational breakthrough since moveable type. You may have read those thoughts before ("Computers are Kid's Stuff", September 1979 PROG/80), but they're worth asserting again. I've tested my theories for another year since I last wrote — in the classroom with 4- to 8-year-olds, at home with my children, and with a range of older tutees and students — and I stick by what I wrote.

My sorrowful cry continues, (and I hear others echo it): WHERE'S THE DECENT SOFTWARE? Lurking in the hearts and minds of parents, teachers, and computer-philes who remember what it was like to be children, I guess. Our job is to get those programs out, up, and running!

Apart from the academic quibble — most teaching software doesn't teach — I have two criticisms of most existing educational programs. First, they test rather than teach. Kids can spot a test from 50 paces with both eyes tied behind their backs: like other occult phenomena, children simply refuse to be tested. Second (and a bit less obvious) is that usually the balance of "dulce" to "utile" isn't delicate enough for children: a case can be made for Star Trek as educational — vectors, coordinates, compass headings, etc. — and a bells-and-whistles edition of the State Game is undoubtedly entertaining, but...
say, "This is mmmm. This is ssss." That's the first period of the lesson: introduction of the concrete object linked to its name. The second period provides the child with the name, and challenges her to choose the corresponding object: you say, "Could you point to the mmmm? ...to the ssss?" In case of error you'd say, "Thank you for showing me the ssss, but I asked for the mmmm." "Leave them hungry" being a cardinal tenet of Montessori teaching, it's soon time to put the sounds away. As the child picks them up, you innocently ask, "What's that sound?" When the child supplies the answer, the third period, internal association of object and name, is complete.

The first step toward writing establishes this association between symbol and sound — "M" makes the sound "mmm", and so forth — and this happens best when a "teacher", someone who knows the program, works with the student. Montessori doctrine dictates that the symbols are identified by their sounds — like "mmm" and "sss" — and NOT by their names — "tea" and "ess" and "em". And the newcomer to reading can begin with a minimal "tool kit" of sounds/symbols — a suggested order of introduction is in Table 1.

| 1st group: | mast |
| 2nd group: | crib |
| 3rd group: | golf |
| 4th group: | pendu |

Table 1

The theory: there's enough to learn without introducing one extra layer of complexity.

Making the jump from single sounds to words comes when the child recognizes known sounds at the beginning of familiar words. We use a game called "I Spy" with children at this stage — "I Spy (with my little eye) something in the room that begins with mmmm," we say, "Cat," hoots my student. "No, Damiana," we reply patiently, "That begins with the sound cckk. I spy something..." and so on. For the teacher this activity develops patience, and an overpowering urge to computerize the learning process.

The next step is blending two sounds: aaaa with tttt makes at...add an mmmm and you have mat. This phonetic word-building strategy makes about 80% of the English language self-spelling. (Dr. Montessori devised her method for Italian, which has a better phonetic batting average.) Unless you have a computer which speaks and listens, teaching this process requires a helpful human.

But now, with these two skills — sound/symbol association and blending — the child can attack language on the computer. (Some of the simplest commands — RUN is a good example — are phonetic, and so the child moves toward independent mastery of the machine.) ONECLAP is designed to develop and polish these earliest skills, and carry the child way beyond...
independence. But at the first session this might be enough: it’s critically important to remember that children have short attention spans, and shouldn’t be pushed past their limits for our self-centered reasons. The program will always be there for another session.

SECTION 4
—the Second Period—

Where the first period supplies symbol and name, the second period requires the child to supply one in response to the other. Observing children working with early versions of ONECLAP, I noted that they had difficulty finding the sounds they wanted on the keyboard. The obvious reason, their unfamiliarity with a typewriter and its arbitrary location of the letters, can be attacked directly: keyboards are here to stay, and time spent learning how to work them is productive. A less obvious difficulty is the unfamiliarity of the typeface. We’ve decided to bite the bullet and run this program in capital letters despite the objections — the caps aren’t what they’ll use primarily in later life. Yes, but: many TRS-80s don’t have lower case. (The overwhelming POWER of the TRS-80 mitigates Radio Shack’s corner-cutting, we all agree. Now: get it fixed!) Much more to the point, the key-caps should correspond with the display. Unmistakably, the inventor of the typewriter should have used lower-case shapes on his keycaps, but he didn’t, and the stupidity has been compounded down through the years, so we’d just as well make the best of it. (A survey of reading presentations reveals that back-to-back introduction of lower- and upper-case letters is common outside of the Montessori Establishment, and in most beginning alphabet books.)

So, while the first period requires little of the child, typing “ON” takes her to the second level of difficulty, where she’ll be asked to copy the symbols presented by the machine in traditional left-to-right order. Wrong responses will be locked out. A finished screen will look like this:

```
P A N
P A N
```

waiting for the “ENTER” which will bring up the next screen, another randomly chosen one-clap word. Should the child “space out”, the machine waits a polite interval, then prompts: “ENTER”.

This “interactive keyboard” phase allows time for the discovery of the letter locations, and also provides an opportunity to check that the child preserves the correspondence between symbol and sound. In the above example, the child should quietly say each sound — pppp, aaaa, nnnn — as the key is pressed, then make the blend — pan — as she inspects the display in preparation for ending the round with “ENTER”. Observation of this procedure will make the program especially useful.

If the child ignores the machine’s word and types “ON”, the program proceeds to the third and final period of the program. “END”, of course, exits to the endgame.

SECTION 5
—the Third Period—

In this third mode, the machine provides (at random) only the final consonant; the child is challenged to find a one-clap word ending with it. Each word is evaluated by the machine, and characterized as a word, or “not on my list” — it’s dangerous to commit oneself, as programmer, to saying something’s not a word, because there are probably words you and I have never heard. Typing ‘END” takes the child to the endgame list. All entries are evaluated exactly as entered: we’re seeking a synthesis of symbol/sound association, word-building, beginning typing skills, and complexity of language even within a simple sub-group.

This is the main course, for which the first two sections served as appetizer. Most children will inspect the first parts carefully a few times, but later will skip to this part with two quick “ON”’s. And that’s fine: here’s where a systematic exploration of the rational structure of the English language (and some of its more glaring irrationalities) begins. Hearing skills get sharpened right at the outset when the machine deems “slep” NOT ON MY LIST “, but cheerfully accepts “slip”. The immense power of the phonetic concept lets the child write and read words she’s never heard before. And there’s always that exciting time when the child finds a word that really IS a word, but isn’t on the machine’s list. Our children keep coming back for years, looking for new words, funny words, (dirty words?), long words that are still one-clappers, and experimenting with combinations of letters.

We should trap the words that the child’s gotten already with a mild admonishment — “THAT’S A WORD...BUT YOU GOT IT ALREADY”. And we should also trap those words that should be right, but aren’t — eg, wat, nit — and explain the absurdity:

```
PLEASE GIVE ME A WORD ENDING
—D
```

the child enters AD
ALMOST A WORD.
WOULD YOU LIKE TO KNOW MORE?
If the child answers yes, the screen clears, then
SOME WORDS ARE FUNNY. THIS ONE
NEEDS TO DOUBLE THE LAST LETTER
ADD

Remember that you’re writing for young children who aren’t too firmly based in their reading skills — the computer’s speed and flashiness can be bewildering.

Trust the child to prescribe the right number of words. Often it will seem to us too few, but children aren’t the gluttons for punishment we’ve become in our maturity. Remember the watch word: “Leave ‘em hungry”...and they may come back for more! When the time has come, the child brings on the endgame with the phonetic word “END”.

The endgame is most impressive if you have a printer: the child leaves the computer with his work neatly printed out for his enjoyment, and for sharing with others.
It's important for diagnostic reasons (for the child and the programmer) to save the "unwords". The appearance of near-misses indicates a sloppiness in the child's apprehension of the sounds, usually the vowels, which needs remedying as early as possible. Similarly, the programmer should plug in real words left off the machine's list at the earliest convenience: you can count on it — the kid will look for those words at his next session. (I also take words off the list from time to time, so that children can find them.) Lacking a printer, a read-out to the screen, and the invitation to the child to "copy a few", gives a sense of consolidation.

Often parents and teachers new to computer-aided instruction are troubled by the "de-personalization" of the learning process. Applied to calculators in early grades, this objection takes the familiar form "What if you're on a desert island, and your batteries fail?" It's our fond hope that the underlying principles — mathematical or linguistic — will embed themselves in young minds firmly even without the painful repetition and rote-learning most of us survived in earlier years. I have no doubt but that computers and keyboard-driven devices will brighten the days of our children when they at last enter the working world: why should they not begin their romance at a tender age?

SECTION 6
-Technical Challenge-

Computational speed is seldom of much moment in children's programming, because children achieve extended attention by weaving moments of wool-gathering into the long haul. Nevertheless, language programs, like this one, with lots of string-searching, should be written as tightly as possible. Machine language routines would provide an elegant speed-up, but the program needs to be easily maintainable. Evaluation of the material we're concerned with here shows that the bulk of it is in three-letter words of the form "CAT". The four-and-more letter words are another case, and the exceptions are a third.

I've adopted a search tree that looks like this:

For the three-letter search, I zip through a long strip of words — BATCATEATFAT...NPUTTRUTEND — using the midstring function and biting them off three at a time. It could be done with just the first two letters — BACAEFA etc. — but I don't think the increased speed would make up for the difficulty of making sense out of the string at debugging and maintenance time.

For the 4+ letter search, I used spaces as the delimiters, and the # symbol to note "end of string". The exceptions require that their type be encoded with the probable misspelling. "Wat", "ad", and "eg" all belong to the family of words that need a double last letter — call them type 1. "Nit" and "nat" need help with their initial sound — types 2 and 3. "Det" requires an added b — type 4.

Assuming the input word is on the list, the program needs to perform another string search to see if it's been used before. The 4+ letter search procedure works fine here, run on a string of all the good words.

Other programming considerations — the need for clarity and elegance in the display, for instance, and the fact that the program's material is linguistic, not algebraic, should be of interest to the programmer. This program can be a model, a starting place from which other language-teaching programs could be developed. One of the unwritten laws of programming — do I dare write it? — is that any program, if up and running, is obsolete.

SECTION 7
-Looking Forward-

If the computer is to play a real role in the classroom — and it will, my friends, it will — it won't be because there are a few comprehensive and exciting programs scattered all over the map of education. To succeed in any real sense, CAI must begin to be a useful program, undertaking to apply the computer's obvious strengths in an area where they're appreciated. But it's a drop in the bucket of the whole linguistic curriculum. Carver's Peanut Principle decrees that many, many special programs must be written to manage the complexities of learning language.

Where to work next? The next place in the Montessori continuum needing attention is the area of phonemes — two letters (like "ou" or "ow") which, taken together, have a unique sound. Unfortunately for the beginning reader, the sounds are multidinous, inconsistent, often overlapping. Nevertheless, they are systematic exceptions...and where there's a system, there's a way to program it.

As the children grow up, their skills burgeon, and some child-oriented games will be needed. Some of the less orderly exceptions will need to be dealt with. Somewhere out there, someone has a pet concept that can be made into a program that will help our kids read. It's not all that hard: a little study and experimentation, some plain-and-fancy flow charting, time observing the first few kids on the first-draft program work, some thought and polishing, and — voilà! — the program is done. The challenge to the programmer should be persuasive enough.
Reading is the key to so much — not just the recreational material, but the incredible avalanche of technical stuff that may very well bury us all. Nor need I linger on the increasing class sizes and the exploding curricula our children are expected to master before they hit the job market in not-so-many years. It’s true that math programs are easier to write, and game programs have interesting graphics, but we need to remember that it’s not just a fun machine for adults; we, too, should seek a decent balance of dulce and utile in our work. A caution I didn’t mention before: software seems to be, all too often, the domain of illiterates — the first ranks of the TV generation. We should remember that we "write" a program: the stylistic and aesthetic values of any literary form should apply.

The rewards of authorship accrue to the programmer as surely as to the poet: reading leads our children toward independence faster than any other acquired skill. By helping our children address and stretch the frontiers of their knowledge, through the agency of a program we’ve written, we begin truly to realize the promise of computer-aided instruction — one of the most exciting promises of our time.

Now, take silent e for example: that’s fertile field for a learning program. If we take the string of all...
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For the 80's—an enhanced NEWDOS for your TRS-80™ Model 1.

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- New editing commands that allow program lines to be deleted from one location and moved to another or to allow the duplication of a program line with the deletion of the original.
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NEWDOS/80 with all of the NEWDOS + utility programs, many of which have been enhanced, is priced at just $149.00 and is available at most TRS-80 dealers. Previous NEWDOS owners may receive full trade in allowance toward the purchase of NEWDOS/80 by including their order the serial number of their NEWDOS 2.1 diskette, the price paid and where purchased. In most cases that purchase price will be subtracted from the price of NEWDOS/80. As with NEWDOS 2.1, NEWDOS/80 relies on the TRSDOS and Disk Basic Reference Manual published by Radio Shack.

NEWDOS/80 documentation supports its enhancements and upgrades only.

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Letters to the Editor...

Gentlemen:

With regard to Lance Micklus’ article on “pirates”… may I say that I agree with his premise that the copying of ideas tends to cause authors and inventors to devote their efforts to other fields. It should be obvious to anyone except the dwellers in the dreamland of the political left who feel that no-one should be rewarded for his/her efforts but that all should share in what others produce; to each according to his needs and from each according to his abilities. Since I need a program or idea, and don’t have the ability to create it, I have the right to steal it.

Unfortunately, few are going to refrain from such theft simply because it is immoral or even illegal. I had a personal experience with a former employee stealing a design, even though it was protected by law, and by an employment contract. From a practical standpoint, there was nothing I could do to prevent him from having the article made by one of my competitors. The development time my company spent on the item, which had to be amortized over the sales price of several items, was obviously not a cost to the other manufacturer. What I found really galling was their use of a picture of my item in their sales literature.

However, I do have a solution for the problem. Just as I swallowed my pride and continued manufacturing the stolen design, I would recommend that talented programmers, whose games we enjoy, do the same. I no longer compete with my own design because I priced it such that it is not attractive to copy. I suggest that all software be so marketed. For example, I buy cassettes from Pyramid Data Systems, in small quantities, for about sixty cents each. If I record a program or two on it, and sell it for four bucks or so, isn’t the inconvenience worth more to a pirate than the four bucks? How many pirated editions of CLOAD do you see? At three sixty a copy, people are too lazy to bother. It’s easier to pay the price than to copy it.

So, I say—hang the ethics. Nobody gives a rat’s tail about morality these days. Turn the customer’s vice to your advantage. Mass-produce your programs and sell them so cheaply nobody would bother to copy them. And if you ever suspect somebody of doing so, you’ll have the satisfaction of knowing it cost them more than if they bought from you.

Sincerely,

John A. Hern, Jr.

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NOTICE TO S-8IGHTY READERS

With the May issue, the S-8ightly Magazine will arrive free of charge only to readers who subscribe to either SoftSide S-80 Edition, or Prog 80. If you have been a customer of The Software Exchange in recent weeks, then you will also receive The S-8ightly free of charge.

To all others, a $3.00 subscription fee for 12 issues will be required.

Please fill out the attached and return with your subscription fee to: P.O.Box 68 Milford, New Hampshire 03055

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(Continued from page 8)

More New Products!

MICROSOFT CONSUMER PRODUCTS ANNOUNCES TRS-80 BASIC COMPILER

Bellevue, WA, March 14, 1980—Microsoft Consumer Products announces BASIC Compiler for the TRS-80, a powerful tool for BASIC programming that increases program execution an average of 3-10 times.

Microsoft BASIC Compiler compiles programs written with the TRS-80 Disk BASIC interpreter, producing Z-80 machine code that is directly executed by the TRS-80. Extensive optimizations performed during compilation maximize the speed of the resulting object code. Speeds up to 30 times faster than the speed of interpreted programs can be obtained if extensive use of integer operations is made.

In addition to adding speed the compiler also has new programming features to make writing BASIC programs easier and more efficient. These include double precision trigonometric functions; full PRINT USING for formatted output; extensive disk file capability; WHILE/WEND conditionals; variable names up to 40 characters; and a CALL statement to assemble language or FORTRAN subroutines.
If you were one of the 8000+ adventurous and intrepid readers of Volume 1 of the "Disassembled Handbook For TRS-80", I truly promise that Volume 2 will 'blow your mind'. It turns out that Volume 1 was only a TEASER that introduced the reader to using Level II ROM's myriad subroutines in assembly language programming. Volume 2's 175 pages provide in-depth coverage of: "all the things you wanted to know about Level II ROM, but were afraid to ask". To give you an idea of all the good things in Volume 2, let me briefly review the 14 chapters.

Chapter 1:
Covers all 694 Z-80 instructions and illustrates both their decimal and hex values. This is the FIRST treatise I have seen that matches up the Z-80 instruction set with its decimal value, which is the way the TRS-80's PEEK function reads-out a given Level II ROM MEM location. When you finish this chapter, you will understand how easy it is to disassemble ROM by yourself...no disassembler required.

Chapter 2:
Is a partial disassembled listing of Level II ROM with a number of object and source codes blanked out to protect Microsoft, the copyright owner. Since you have finished Chapter 1 by now, filling in the blank spaces is a SNAP.

Chapters 3 & 4:
Illustrate how ROM stores integers, strings, and string arrays in MEM. A number of mini-programs illustrate these functions' storage protocols using VARPTR.

Chapter 5:
Is the first treatise this reviewer has ever seen which clearly and lucidly explains how single and double precision floating-point numbers are stored in MEM, plus provides a number of truly UNIQUE programs that will logically and unassumingly decode their absolute and true values. This chapter is really worth the price of the entire book, in my opinion.

Chapter 6:
Explains and fully covers how both non-disk and disk users, without the NEWDOS press—'JKL'—to—LPRINT—out—video feature, may quite simply utilize and add this useful function. Even NEWDOS users will find it attractive as it adds the function of 'press SPACE-BAR' to stop printing.

Chapter 7:
Presents a program plus detailed comments that will teach the reader video MEM handling, storage, and recall techniques that are extremely useful for all sorts of applications. These include storing and recalling telephone line/Modem computer bulletin boards and/or teletype, just to name a few. This chapter leads quite logically into Chapter 8.

Chapter 8:
I believe that this is one of the BEST chapters in ANY TRS-80 book EVER published anywhere/anytime. It leads the user very gently and ever so easily into a program that creates a truly SPLIT-SCREEN capability for the TRS-80. Some buffs thought it could not be done. Well, it certainly can be done and it is not all that difficult the way it is presented.

This unique program allows the user to create TWO entirely separate video displays on one TRS-80 screen. Each display is completely independent of the other with its own scrolling, CLS, and MEM storage and recall if desired. When you finish this chapter you will be able to lecture and write a book on the subject.

Chapter 9:
Includes a summary of ALL Level II BASIC ROM CALLS and significant ancillary function CALL addresses. This is a repeat of Volume 1 so that the reader does not have to switch books.

Chapters 10 & 11:
Are BASIC review and cover both a 16K MEM length Morse code transmit/receive program and a TV satellite azimuth-elevation-range program for ALL the major TV satellites up there in geostationary-equatorial orbit. Data is to YOUR location.

Chapters 12 & 13:
Include a bibliography (the author has taken 'kindness pills' in this volume) and the self-programmed learning questions and answers for each chapter. When I occasionally misunderstood a point that was covered, the questions and answers sections invariably clarified the point at hand.

Chapter 14:
Is a useful combined index for Volumes 1 and 2. It surely helps one to find the forgotten location of a given function/subject. It also notes the availability of ALL of the programs from both Volumes 1 and 2 on a single cassette or disk from THE ALTERNATE SOURCE in
Lansing, Michigan. This will certainly be a useful classroom aid to instructors/teachers of computer science professors who do not have the time to compile their own.

**Summary:**
This Volume, as well as Volume 1, will become a classic TRS-80 BIBLE for the advanced programmer, mark my word. It is a MUST for every TRS-80 bookshelf. The author’s style and informal presentation make mastering this heretofore difficult subject a real pleasure instead of an unpleasant rote chore.

---

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**NEWS ON OUR "Monkeying Around" CONTEST**
We have had several guesses as to the wearer of the gorilla suit. None of them were right! The answer of course, is not the obvious. For those of you who would like to keep guessing, here’s a clue: The person under the suit is also a hirsute.

---

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<th>LIST PRICE</th>
<th>OUR PRICE</th>
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<tbody>
<tr>
<td>QPII to Expansion Interface Cable</td>
<td>19.95</td>
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<tr>
<td>LRC to TRS-80 cable</td>
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<td>LRC to APPLE cable</td>
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<td>LRC to EXIY cable</td>
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<td>LRC to PET, IEEE cable</td>
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<tr>
<td>LRC to RS232C male, cable</td>
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<tr>
<td>LRC to RS232C female, cable</td>
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<tr>
<td>730 or 737 to TRS-80 cable</td>
<td>29.00</td>
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<td>779 or 753 to TRS-80 cable</td>
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<th>PERIPHERALS:</th>
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<tr>
<td>Novation CAT Modem</td>
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<td>UDS 103-LP</td>
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<td>RS-232-C Interface Board</td>
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<td>TRS-232 Printer Interface</td>
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<td>DATA Dubber</td>
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<td>Busy Box, APPLE</td>
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<td>BSR X-10, Starter Kit</td>
<td>124.95</td>
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<tr>
<th>ATARI COMPUTERS:</th>
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<td>ATARI 800 Computer System</td>
<td>1080.00</td>
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<td>ATARI 400 Computer</td>
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<td>Paddle Controllers</td>
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*T-80 is a trademark of Tandy Corp.
*Apple is a trademark of Apple Computer Co.
Our Mar-Apr 80 issue tells about how one person improved the resolution on the '80 by a factor of 6! The photo on the cover of that issue tells the story. There is also a complete listing in BASIC of a disk-based file system, using random files and hash codes. Also in BASIC is a program that compares dollar values between any years from 1881 to 1980, and it gives comparative cost figures for housing, transportation, food, etc. (it is in L2 16K). In the "fun and games" department, there is a complete BASIC listing of a game where you play nine games of tic-tac-toe at the same time - the computer is your opponent. In the utilities department there are two methods of creating graphs, a program to give you a HEX dump of memory, and a program to give you number conversion from decimal/octal/hex/binary. In assembly language, there is a complete listing which allows you to selectively scroll any portion of the screen, while leaving the rest of it intact! Plus, there are the regular features: A tutorial on the Editor/Assembler for beginners; New Products; Reviews and the Business Section. It isn't called the "TRS-80 Users Journal" for nothing! It is published regularly every two months, and costs just $16.00 per year in the U.S. Get a sample current issue (first class mail) for just $3.00. Use your VISA or Mastercharge and call (206) 475-2219 today! Or, send check or Money Order to: 80-U.S. Journal 3838 South Warner Street, Tacoma, Washington 98409

Yes! We are the people who developed "Android Nim" and other fine animated graphics programs with sound!