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Texas Instrument 99/4A and Myarc 9640 Computers

Spirit of 99

CENTRAL OHIO NINETY NINERS INC.

THE OFFICIAL NEWSLETTER OF THE CENTRAL OHIO NINETY-NINERS INC.

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Spirit of 99

THE OFFICIAL NEWSLETTER OF CENTRAL OHIO NINETY-NINERS

Spirit of 99 is published monthly for Central Ohio Ninety-Niners Inc. by C.O.N.N.I. members and is the official news letter of C.O.N.N.I. User Group.

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Central Ohio Ninety Niners Inc. is a non profit organization comprised of MEMBERS who own or use the TI99/4A computer and it's related pro-ducts and have paid a yearly membership fee of $28.00 and whose main objective is the exchange of Educational and Scientific information for the purpose of computer literacy.

C.O.N.N.I. meetings are held the 3rd Saturday of each month at Chemical Abstracts, 2540 Olentangy River Road Columbus, OH. Meeting time is 8:30 AM til 2:30PM. Meetings are open to the public. Membership dues ($28.00) are payable yearly to C.O.N.N.I. and cover the immediate family of the member. (An application has been placed in this newsletter for your convenience) Please address it to:
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Happy Holidays

From the Central Ohio Ninety-Niners Inc.

REMEMBER

No Wednesday Meeting in December

January Meetings
Saturday 1/19
Wednesday 1/23

advertisement

An Invitation

TI99/4A USERS GROUP (U.K.) invites you to join with us. and receive our quarterly magazine. which offers at least 60 pages per issue of largely new or little published information of interest to TI99/4A owners.

We are now entering our eighth year of operation. with around 150 members. at present mostly in the U.K., and about half our membership unexpanded. Our membership subscription is Fifteen Pounds Sterling per year by seamail. or Eighteen Pounds Sterling per year by airmail.

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Cuffley. POTTERS BAR.
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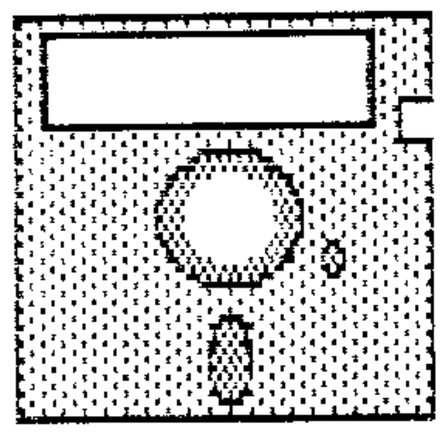
A DEAL YOU CAN'T PASS UP!

SPIRIT OF 99
NEWSLETTER



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CONTACT

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TI WORLD NEWS NOV. 1990 by Jim Peterson

TM Direct Marketing has taken over Triton's stock of TI-99/4A products, and will be issuing a catalog next year. In the meantime, they are taking orders from Triton's last catalog on their toll-free number 800-336-9966. Their address is 379 Beach Road, Burlingame CA 94010.

Bruce Harrison, author of that fantastic assembly music, and of a unique word processor, is now offering a Golf Analyzer program. The address is 5705 40th Place, Hyattsville MD 20781.

The TI-99/4A, like most computers, is extremely inaccurate when dealing with very large numbers. I recently published some routines to get around this limitation. Wesley R. Richardson has now created a much more comprehensive program to perform precise mathematical computations on numbers of almost any length. If you have need of such a program, it is available from him for $10 at 18140 Rolling Brook, Bainbridge OH 44022-4860. The Computer Voice of the Southern California UG reports that Woody Wilson and Meredith Beyers are working on a similar program called PBA (Power Base Arithmetic), using a more advanced mathematical algorithm, which will be released to public domain when completed.

Norm Sellers, 15 Dorset Drive, Broomall PA 19008, is offering a Disk Directory program for $20 and a Disk Cleanup program for $15, or both for $30. He is also offering five different disks of assembly music, to be played through his Music Preprocessor program, for $5 each or $9 for a flippy. I have recently been working with his Music Preprocessor, a fairware program. It is a unique and practical program to play assembly music from data coded in REM statements in an XBasic program, and a fantastic array of musical effects are possible.

Mickey Schmitt, the adventure games and cassette expert, is reported to have teamed up with someone to form a new software company called MS Express Software. Ken Gilliland, author of the singing music programs and the KGB girlie calendar, etc., has teamed up with someone to form Notung Software. I have neither an address nor a product list from either because, like most TI suppliers, they are not doing any advertising!

The TI world continues to do its very best to make itself invisible. I have been nagging the user groups for years to take advantage of the free FOG listing in Computer Shopper, and now also in Vulcan's Computer Monthly, so that prospective new members can find them. Less than a quarter of the user groups are doing so! I have a list of TI suppliers that I print out and mail to anyone who writes to me for something that I don't supply. Some dealers aren't on the list - because I can't find their address anywhere! I recently wrote to 33 suppliers, also had the letter published in MicroPendium and uploaded to GENie, suggesting that we all get together to publish classified ads in the major newsstand publications, letting the world know that the TI is still alive. I have not heard one whisper of response. I can only conclude that the TI is NOT alive!

Eunice Spooner, a remarkable teacher and advocate of the TI in education, has made available a VHS videotape and disk to teach LOGO. It is available from her for $10; the address is RFD 1, Webb Road, Box 3720, Waterville ME 04901.

Barry Traver, in his Classic Computer column in Vulcan's Computer Monthly, reports that Al Beard, Paul Charlton, and at least two others are working on a fuller implementation of the C language (Clint Pulley's c99 is already well known). Jean Marleau's Multi-Mode XB is now available only from PRO-JEM, P.O. Box 155, Station D, Montreal Quebec, Canada H3K 3B9.

Stephen Shaw, formerly of Stainless Software in England, is using The Missing Link and complex mathematical algorithms to VERY slowly create abstract patterns, pixel by pixel. He has released a diskfull of these as fairware, and another disk with an attempt at animating some of them. If you're interested, I have it available.

Tigercub Software (156 Collingwood Ave., Columbus OH 43213) has now published TI-PD Catalog #4, listing over 450 disks full of public domain and fairware at $1.50 per disk. The catalog is available for $1, deductable from first order.

Hardware

Q & D HARDWARE MODS

Steve Burns
Bluegrass 99'ers

Sometimes a simple straightforward solution is the best. Here are two examples of quite different problems that I solved in similar ways. Both took only seconds and have worked quite well.

The first problem was one that is common to nearly everyone who owns a TI and expansion box. The heavy connector and "firehose" cable that plugs in to the side of the console frequently comes loose when the console is moved. This fix requires only a small piece of adhesive backed Velcro. Cut two small strips to fit on either side of the connector and place them as shown in Fig.1. The Velcro will help prevent the "firehose" from pulling loose, even when the console is scooted all over the desk. This is cheap, easy and makes no permanent modification to either console or cable.

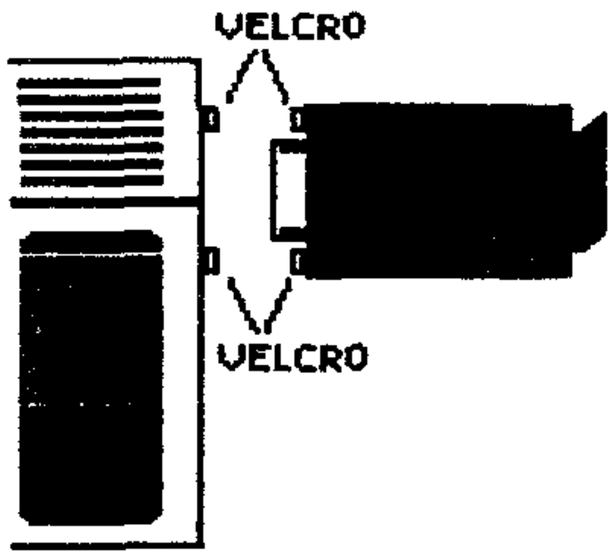


FIG. 1

Another problem I had was using pinfeed labels with my NX-1000 printer. Although the printer should have handled them with no trouble, they kept jumping off the pins and jamming. The NX -1000 depends on little plastic covers to hold the labels on the pins. I took some adhesive backed sponge rubber (such as is used for weatherstripping) and placed it on top of the plastic pin covers so that when the rear printer cover is snapped in place, it prevents the little pinfeed covers from flipping up (see Fig.2). The lables now feed through flawlessly.

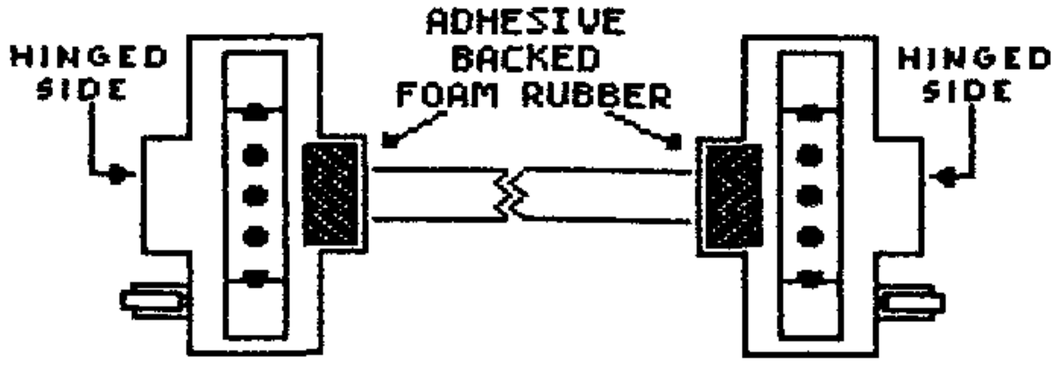
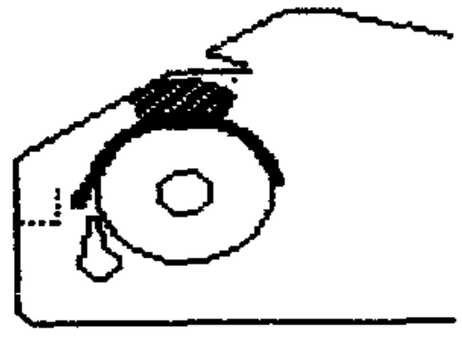


FIG. 2



SIDE VIEW
FIG. 2

I LIKE BRAIN GAMES!

by Jim Peterson

I don't much care for those fast-action arcade type games - the dodge-the-pacman, climb-the-ladder, shoot-the-alien type of thing. My grey-haired reflexes are too slow, and my 8-year old grandson can play rings around me.

And I HATE those adventure games that do nothing but print out responses that "I don't know how to do that" or "you can't go thataway". Sounds too much like the SYNTAX ERROR or BAD VALUE messages that I get when I'm trying to write a *program!*

But I do like brain games! - the ones that challenge me to exercise the grey cells under my grey hair, and give me plenty of time to do so. I also enjoy programming that type of game - although they have certainly proven to be the least popular of anything I have ever done.

The world's premier brain game, of course, is chess. I can't comment much on that, because I don't know the game - other than the wild Japanese version, where every piece that reaches enemy territory can be promoted and every captured piece can be placed back on the board as your own. I wish that someone would program that game!

Anyway, Western-style chess is available as an old Texas Instruments module and as a public domain program translated by Swiridenko from a version written for some other computer. From reviews, I understand that neither offers much of a challenge to an expert, but that either one is a worthy opponent for an average player.

There are also a couple of TI computer games based on chess. The Queen Board Game, public domain by D. Decker, is a real challenge. Hexapawn is an early computer classic from Ahl's days; the computer starts out by knowing nothing but learns from its mistakes and, after a few games, becomes unbeatable!

The blue-collar, redneck equivelant of chess is checkers. Several versions have been written for the TI, all apparently from scratch. Their programmers deserve credit for tackling a complex subject, but any of their games can be easily beaten by a beginner.

The favorite game of most of Africa, and dating back to 2000 B.C. in the Middle East, is Mancala, also known as Awari or Mawari in other African languages. It is commonly played with pebbles placed in holes dug in the dirt, or gouged out of a slab of wood. Several public domain versions exist, but the best game by far is the assembly version called Mancala, copyrighted in 1982 by Aldebaran and finally released recently by Triton.

Othello is an American board game, based on ancient Oriental games, in which the object is to capture territory by placing markers at both ends of a row. Its weakness is that the player who goes first is at a distinct disadvantage. Several public domain versions have been released for the TI, all quite slow. Dean Clevaland's was the first. I like the version by Rick Mirus, which has a black board. Nguyen Long in France wrote the version which is most difficult to beat but it is also very slow, presumably because the computer researches each move one step fartner.

Go or Gomoku is a simpler game in which the object is to get 5 markers in a row before your opponent blocks you. There are several public domain versions, but the best by far is Links by Curtis Alan Provance, a unique variant with many features not found elsewhere.

A variant of this game, popular as a toy several years ago but a really challenging brain game, involves stacking chips to get four in a row either vertically or diagonally. One of the best versions was written in the Netherlands.

Tic-Tac-Toe is a child's game, too simple to be called a brain game, but there are 3-dimensional versions, by various authors, which are much more challenging. I have been planning, for years, to write a version in which, if the first player gets 3 in a row and the second player can counter with 3 in a row, the game continues.

The 15 Puzzle was originally a pocket game, consisting of fifteen tiles numbered 1 to 15, randomly arranged in a 4x4 grid, movable but locked within the grid by a frame. The challenge was to slide the tiles around until the numbers were in sequence. The promoter sold hundreds of thousands by offering a large reward to anyone who could solve the puzzle - but his version was impossible to solve! Some public domain computer versions are also impossible, because the programmer has assumed that any random arrangement of numbers was possible. The Texas Instruments version, sold in the early days on cassette, correctly started out with a properly sequenced grid in memory and then scrambled it by a series of random moves. My version did the same, and also offered the option of having two players take turns solving the same puzzle.

Many puzzle games are based on determining, by a series of educated guesses, the sequence in which the computer has randomly arranged colored squares or what have you. These are most frequently called Master Mind, and the most ambitious was written in assembly, occupying 322 disk sectors (!), by J-L. Bazanegue in France.

Peg Jump was an old favorite board game in which holes in a board, in the form of a cross, were filled with pegs. The object was to jump pegs over each other, removing jumped pegs as in checkers, until only one peg remained in the center hole. Texas Instruments sold a good version of this on cassette; Regena wrote another fine version. Many many years ago I owned one of these puzzles which was accompanied by a little booklet showing about 50 "end games." If I could find that booklet again, it would be fun to program these end games into the TI or Regena versions.

Games of the "fox and geese" type rquire moving, or blocking moves, along certain pathways. The best of these in the TI world, and very difficult to beat, are Giants and Dwarfs by Barry Traver and Quintus by Sam Pincus.

Another type requires placing geometric figures within a specified area. This is the basis for the L-Game, originally published in Ahl's Creative Computing by Bill Gardner. I have never been able to beat it. *Of the same type, but much* less difficult, is my Mechanical Aptitude Test, based on the "broken block" problems of S.A.T. tests and other IQ tests.

Many brain games are based on a mathematical theorem or a mathematical progression. These are almost impossible to win until you have puzzled out the secret, and too easy to win thereafter. An example is Pick Up Sticks, in which you and the computer take turns picking up 1 to 3 sticks from a pile of random size, with the player who gets the last stick being the loser. In my version, after the user has lost several games, the computer changes the rules to specify that whoever gets the last stick is the winner - but the computer can still win every time! My Can of Worms lets the user make up all the rules, but he still loses - and Nimbo,

based on the Fibonacci series of numbers, is almost impossible to win without knowing the secret.

Other mathematical puzzles depend on logical thinking. Barry Traver wrote a series of three, based on the number 31, which appeared in a recent Genial Traveler. I have written several, mostly as "tinygrams" or short programs in my Tips From The Tigercub. Regena recently published in Micropendium her ingenious Magic Boxes which has several skil levels ranging from fairly easy to extremely difficult.

Most card games played against the computer, such as Twenty-One or Blackjack, are based on pure luck rather than skill or brainwork. There are also various poker games, but I doubt that anyone has yet programmed on the TI - perhaps not on any computer? - the true odds on a poker hand. Arcade Action Software has released a cribbage game which has been reviewed highly, but I have not seen it - nor do I know how to play the game.

Most solitaire card games are based on pure luck. Quality 99's QS-Solitaire is a beautifully programmed solitaire game in assembly, but it is the standard Klondike game in which no real skill is involved. However, Walt Howe's Chainlink Solitaire is my favorite of all the brain games ever programmed for the TI-99/4A. In this version of solitaire, all cards are visible, so an intelligent choice of moves is available - and an option is available to replay the hand by a different method, if the first try ends in failure. The later fairware versions of this program, with assembly links, are very fast. The commercial version, with ribbons of cards streaming between piles, is something to be seen!

Regena published in Micropendium a Poker Solitaire game which also lends itself to some intelligent playing.

Word games are still another category which requires some brainwork - although I would consider the mental exercise to be minimal in the popular wordsearch puzzles, the object of which is to find each of a list of words within a grid of letters. Texas Instruments had this on a cassette. My version offers a somewhat more challenging option, to find words of a specified category which are not listed.

Cryptograms are perhaps the most challenging of word games, but as far as I know, no one has programmed a diskfull of them for the TI-99/4A. The simplest word game is Scramble, in which the letters of a word have been reassembled into a random arrangement. I wrote one of those, as did everyone else, but I also wrote a more challenging version called Scrambulation, in which each word of a sentence is scrambled and, optionally, the sequence of words is also rearranged. I also wrote Squinch, which Jack Sughrue described as a fiendish game - two words with their letters randomly intermingled into one. And I wrote Bazoo, in which you must find a word by guessing 5 letters at a time, and Changeroo in which you must change one word into another by changing a letter at a time, making a valid new word each time.

However, I believe that the most unique word game ever written for the TI is Karl Romstedt's Superjot, into which he has programmed every 3-letter word in the English language. You and the computer each select a word, and try to guess each other's word - the computer wins more often than not!

Memory games also qualify as brain games, I believe. The most popular is Concentration, originally based on remembering the locations of pairs of cards in a deck scattered face down. Computer versions, such as my Match A Patch, normally use graphics patterns rather than cards.

Other memory games are based on remembering a sequence of numbers or colors, etc. - these are the Simon games. The most viciously difficult of these is one that I wrote several years ago called Nervous Breakdown - it challenges you to simultaneously remember the sequence of three flashing colors, the highest and lowest of three numbers, and the highest and lowest of three tones!

Maze games, if played intelligently rather than by guesswork, are also brain games. The best of these are the "hallways" type which graphically depict your progress through the maze in 3-dimensional graphics.

And there are many other types of brain games - the many versions of the Towers of Hanoi; coin switching puzzles and coin weighing puzzles and liquid measuring puzzles; the classic Nim, and the other classic computer puzzles such as Black Box, Explosion, and others. And I hardly know where to classify some that I have written, such as Reverso and Bassackwards - and Preachers, Lawyers and Salesman.

Most of these I have mentioned are in the public domain, not even fairware. So, if you are tired of trying to zap the invading aliens, if the text adventure has brought you back to the starting point for the umpteenth time, why not try doing something intelligent for a change?

Mike Maksimik TechTalk . . .

Some of you may have followed TI's developments in the time that the 99/4A was at it's childhood. All sorts of plans, marvels, new things for the home computer that "was ahead of it's time." There were several peripherals developed by TI but were only released in tiny quantities, mostly to the TI employees that got the pick of the crop. Some of these never made it to the production lines, but only a few prototypes survived. The modem card, which essentially was a Novation Cat 300 baud modem, was placed on a peripheral card, and a DSR ROM was given it to control very low-level functions, such as modem-to-vdp RAM interrupt routine, powerup routine, etc. It would work with a command module, like TE II just as the disk manager module works with the low-level routines in the disk controller to perform the DOS functions. Only a very few of these survived. Another little known card was the IEEE 488 bus controller card. It contained the TMS9914 GPIB (general purpose interface bus) that allowed the lab and mechanical equipment that used GPIB to interface to the TI. One could access the GPIB like a file device. This same standard is found in unexpected places. Any of you have a commodore 64? The communications bus used to connect it's ring-style bus of peripherals is a modified GPIB, one of commodore's own design. The SCSI interface (small computer systems interface) is essentially a multi-GPIB, allowing very fast buffered serial transfer between storage devices. SCSI also has interrupt lines to alert the host that data is waiting to be read or written. The VCR controller, a $500.00 range peripheral, along with support software, was introduced as a means to combine video from a VCR and the video from a TI. The card would control playback, hold, framing, and other functions. Digital Research created a similar product to control videodiscs that attached to an apple or a commodore 64, although much later than TI's development. The debugger card, a little known device, was in existence when the 99/4A was born. In fact, it's design can be rooted to the support hardware in the 990 minicomputer series. Essentially, the TMS9900 is a minicomputer on a chip. The editor/assembler GROM was a virtual image of the DX10 assembler used on the 990 minicomupter. Some directives one would only find on a minicomputer exist in the editor/assembler package, but were dormant in the 99/4A. The debugger board was designed to bring the 99/4A closer to a minicomputer's environment. The DEBUG program, included with the editor/assembler package, has several features that cannot be used without this piece of hardware. In fact, the editor/assembler looks as if it was taken direct from a 990 itself. The only added features were the GROM utilities, sucha VMBW, DSRLNK, LOADER, etc. that didn't support the features that a 990 could handle. It's too bad that TI wishes to keep the plans for this card on ice, it would be a dream to program with. It allowed multiple breakpoints by using the XOP 3 opcode, which would allow you to step your program through and look for errors or miscalculations. Although we can do this through software, the debugger board used a hardware approach. The design of this board, and what it contained, are up for grabs. If anybody knows, i'd appreciate you sharing with the rest of us. Send me a

TECHTALK . . . (CONTINUED

letter. Still another rare peripheral was the GROM library peripheral. It essentially was a super-widget that could access ALL of the GROM in the cartridges. This would be handy for TI BASIC, since TI BASIC searches external GROM for subprograms. TI extended BASIC does this too, but doesn't search DSR ROM when a program is running. Modules like TE II, personal record keeping, and extended BASIC could all be plugged in and the CALL routines could be accessible to BASIC. BASIC could use the commands it wished to whatever, and all you had to do is plug your favorite "flavor" modules into the library peripheral to get the necessary language expansion. Imagine a GROM cartridge giving advanced graphics to TI BASIC, another for print spooling, still another for expansion memory control. Others for high speed cassette routines, etc. so the language could expand by adding cartridges. It's the same technique used with the peripherals: the computer never becomes obsolete, because it automatically responds to any new device attached. This is true of the library peripheral. This is another device I would LOVE to see.

Some of us have the HEX-BUS controller. In the days of the 99/2, the CC40, and the 99/8, the hex-bus controller was introduced for the 99/4A to allow compatibility with these devices. Essentially, they were designed like the commodore 64's peripheral system, where a slow serial transfer was appropriate for the hex-bus devices, a disk drive wouldn't be feasible. So TI never considered the HEX-BUS disk drive. The Wafertape drive, the CAT modem, the RS232/parallel interface, and the 4-color printer, were all developed. All were battery operated and could fit in a briefcase, as did the CC40. For the 99/4A, it was an inexpensive means to expand.The hex-bus controller was a small device containing a DSR ROM that controlled the I/O drivers which "spoke" to the hex-bus peripherals. Since the main use was for the CC40, it wasn't pushed for the 99/4A. The 99/8 could also rely on the PE BOX for it's devices. It had it's own special FLEX CABLE card, which used some special control lines to expand it's own capabilities. Since the 99/8 used a TMS9995, the same as the GENEVE, it could use the extra 3 address lines in the PE BOX, giving a total address space of 2 to the 19th power, or 512 k of directly addressable memory. Since some of these banks were probably switched, the address space grew to a total of 4096 k, which is sufficient for MOST of my needs. The speed of this processor was greater, and it's throughput was even greater, but more on that later. Some other control lines were used, some to indicate a 9900 or a 9995 present in the system, some to allow multi-level interrupts, still others to initiate HOLD sequences, which are found on the mainframes, and large multi-user systems as a way to deal with wasteful processing, and interrupt idling. TI had a HARD DISK controller in the plans, probably MYARC's, but the technical data I have is 1982. I own a rare card. Some of you may remember a company called A/D electronics, out of Sacramento, California. They produced a control card which allowed sampling of environmental data through an 8-bit analog-to-digital controller. This device allowed hookups of many items, such as temperature probes, light transducers, etc. and was mainly used as a scientific device. Some possible uses

TECHTALK . . . (CONTINUED

included home control, because it also contained a real-time battery backed clock. Plus, there were separate digital inputs and outputs, for switches and relays, respectively. My main use for the A/D card, *FIRST ADE*, is a mouse. *The RADIO* SHACK color mouse contains two potentiometers turned by a rolling motion of the mouse. The potentiometers, when interfaced with the ADC0809 chip, (two channels, x and y) gives me mouse control with TI ARTIST. I wrote the DSR myself, and have been using this device for about a year and a half. The MBP clock card is a similar device, although it does not contain a digital input or output array. The ADE card, however, could also switch external relays, or sample data on 16 lines (8 in, 8 out). If timing was correct, an 8-bit parallel interface was possible. I still use this card, and the clock is handy for keeping my p-system master disk up-to date. The FORTi music card was a device which allowed one to produce sound on not one but 4 extra TMS9919 sound generators. By arranging the frequencies on the 12 music channels available, different waveforms were possible. Now, with the FORTi, sounds even a c-64 owner could envy were possible. And, there were 4 percussion channels independent of each other. I can imagine "AXEL-F" running on this card!! And of course, we all know of the more common peripherals, the triple tech, the disk controllers, the 32k cards, te rs232 cards. Even these make our computers sophisticated enough to meet TI's long dead expectations. I also own the p-code card, and another article is devoted to THAT! I mentioned the TMS9995 earlier. Just what exactly is a pipeline microprocessor? Well, the 9995 is not only fast, but it has a distinct advantage over others in it's class, even the intel 80386. Those processors rely on expanded address lines and increased instructions to increase throughput. There was a deeper approach, one that TI envisioned in the 9995. A pipeline microprocessor is one that incorporates special hardware that allows it to have more than one part of the microprocessor running at the same time. These CONCURRENT functions provide that while one instruction is being decoded inside the chip, another is being fetched from memory. Still another is being executed after it has been decoded. At best, with top-down code, and very little jumps, the microprocessor can achieve a throughput 3 times, or more, depending on the level of pipelining, over a regular processor running at that speed. For example, if we put test code into a 9995 and a 9900 running at 12 MHZ, the worst case is that the two run even. But the 9995 can pipeline, and with the pre-fetch and post-store the 9995 can LOOK like it's running 16, 20, or even 24 MHZ. And with the reduced instruction set in the control ROM, the 9995 has a distinct advantage over an 80386, it's MUCH cheaper to produce. The control ROM is a hard-wired design, while the 80386 has to be programmed externally. It is an easy device to interface to a memory system, and with no-wait state static RAM, the memory-9995 combination (up to 4 megabytes) can be phenomenal. Currently, I am working on a software project.

MUSIC PRO VERSION 1.4
Reviewed by Jim Peterson

This program, written by David Caron, won first prize in a software contest held by the Ottawa TI-99/4A User Group in 1988. It is now being sold by Asgard Software. I am sure that Asgard is selling it by arrangement with Bruce and the Ottawa group - in fact, Asgard supplies it with a companion disk containing a utility program for use with Music Pro, also written by David Caron, and the documentation file for this utility refers users to Asgard to obtain Music Pro. However, the status of Music Pro itself is confusing because the program still bears a fairware notice requesting a donation to the Ottawa UG!

The program is written in Extended Basic with many links to assembly, which take up a great deal of memory, and VDP memory is completely remapped. The documentation contains warnings about doing things that could corrupt this memory, and the documentation for the utility program contains many more warnings. They seem to be needed - when I tried keying in a short piece of music and tried to save it, the program crashed, and I found that my filename had been replaced by a long string of garbage!

I must first say that this is a truly remarkable piece of programming. Lucie Dorais has contributed some help files which make it even better. The documentation is also very well written.

The Music Editor displays three blank staff lines on the screen, treble and bass. Notes are entered on these staffs by pressing the appropriate key on the computer keyboard, from Q for low A to the period for high F - alternate rows on the keyboard provide sharps and flats. The disk contains a file which will print out a chart, but a person working with this program would probably soon memorize the keys. Provision is made for shifting to a higher octave but the bass octaves, which are accessible in Extended Basic programming through the -4 noise, are not available.

The length of the note is controlled by holding down the key while its pattern on the staff cycles from a 32nd note to a whole note - I found myself wishing that it would cycle back around when I held it too long. Many editing keys are available, as well as full control of volume. Notes can be "tied together" for a smoother sound; otherwise, the music has a rather "toot-toot" sound.

Only one voice can be programmed at a time. This is saved as a file, and a second and third voice can then be programmed and saved. The Compiler will read all three files and play them together in three-part harmony. While programming the music, the current voice can be played through the Editor, but the effect of combined voices can only be checked by saving the file and going to the Compiler.

This program was obviously written to enable a person with no knowledge of music to simply copy sheet music onto the screen. It does that extremely well. The person would still need some knowledge of key signatures, accidentals, and the notations used to indicate repetitions. I also think they would find it difficult to key in the three separate files without error, and to track down the errors.

However, this is certainly not the most efficient way of programming music, nor the most creative way, and it does not take advantage of musical effects, such as rapid attack and decay, which could only be achieved in assembly. To do so would have probably taken too much memory, and would have made the program too complex for its intended purpose.

I perhaps did not give the program a fair test but I did key in a melody in two voices. When I played them together, I found that I had made mistake somewhere, so that one voice was a quarter-note ahead of the other. The result was still musical, but quite unusual!

I decided that in the length of time I had spent on this, I could have programmed a couple of songs in all three voices in very elementary Basic, with the option of going to various subroutines for a wide variety of musical effects, and with many other features available.

STYLE A LINE
A TINYGRAM

by Ed Machonis

TINYGRAM: A short program which can be typed in its entirety on one screen without any program lines scrolling off the screen. (REM statements can scroll off.) Popularized, I believe, by Mike Stanfill of the Dallas TI Home Computer Group.

First of all let me make clear that this is not a novelty program. It is a work horse, provided you have the work for it. What kind of work? Do you ever have to print just a line or two, such as a page header, an article or picture title, a title for a data base printout, a credit line for a reprinted newsletter article, etc., etc. Further, would you like to print this in an Expanded Compressed Italicized Double Strike Underlined type style? Yes all the same time! If so, this program is for you.

What no printer? I will try to have something for you next month. (A TINY GRAM - NOT a printer!)

Many of you are familiar with my 10 Line basic programs, PRINTSTYLE and and PRINTALINE. (Both TINYGRAMS, written before I knew the name existed.) I often use both of them in titling data base printouts or copy for the Newsletter but it got to be a pain to change between the two every time I wanted to change a type style. Finally the light dawned! Why not marry the two?

STYLE A LINE is the result of that marriage. One major revision was to change an INPUT statement in PRINTALINE to a LINPUT. No more need to enclose in quotes any text lines containing commas or leading spaces

Using LINPUT required that the program run in extended basic. After some streamlining by deletion of unneeded features from PRINTALINE and the consolidation of statements into multi-statement lines, we wound up with 9 Lines of code. (After merging TWO TEN Line programs. The power of extended basic!)

Don't let its brevity fool you. You can select any of the 128 type styles available on the Epson RX-80 and many compatibles. With line spacing and margin variations, over 2000 different selections can be had. (Half line spacing and condensed superscr.pt will let you tack on several lines of comment onto a photocopied article.)

Although there are better ways of doing it, you can even produce a right margin justified letter. (THIS is novelty!) Using Emphasized Pica, set Left Margin at 13, and enter text. Two screen lines will print text 54 characters wide (LINPUT uses two character spaces.) Justify text by inserting spaces between words so that second line ends at screen edge. But it will NEVER replace TI-Writer!

Using the program is very easy. When RUN, a menu is displayed for programming the printer. It is always best to select "1" to clear the printer. If your printer doesn't support a master reset code, turn it off then on to clear it. Combine styles by successive selections. Select Option 10 to input text.

If you wish to change the type style, or do repeated printings of the same text, typing "ZZZ" or "zzz" will return you to the menu. Option 9 will do repeat printing of the same text and styles can be changed as required. To input new text, select Option 10 again. When in text mode, pressing ENTER with no text input will print a blank line.

Watch those commas in Line 10. The next to last data item is a lower case "L", not the figure 1.

BRAIN TEASER: Where is the data to set the left margin at colum 13?

```
1 ! ***  STYLE A LINE   ***
  a TINYGRAM by Ed Machonis
    QB-99ers, Bayside, NY

2 DIM P$(15):: FOR I=1 TO 15
 :: READ P$(I):: NEXT I

3 OPEN #1:"PIO.LF",VARIABLE
132 :: L$=CHR$(10)

4 CALL CLEAR :: PRINT "1 PIC
A/RESET","9  PRINT TEXT","2
ELITE","10 INPUT TEXT","3 EX
PANDED","11 SUPERSCRIPT","4
COMPRESSED","12 SUBSCRIPT"

5 INPUT "5 EMPHASIZED  13 1/
2 LINE SP6 ITALIC      14 L
MARGIN 137 D'BLE STRIK 15 R
MARGIN 678 UNDERLINE    ?":I

6 P$(9)=" "&TEX$ :: PRINT #1
:CHR$(27)&P$(I):: IF I=4 THE
N PRINT #1:CHR$(27)&CHR$(15)

7 IF I<>10 THEN 4

8 PRINT :"INPUT TEXT OR 'ZZZ
' FOR MENU" :: LINPUT TRY$

9 IF TRY$="ZZZ" OR TRY$="zzz
" THEN 4 ELSE TEX$=TRY$&L$ :
: PRINT #1:TEX$ :: GOTO 8

10 DATA @,M,W1,,E,4,G,-1,,,S
0,S1,1,1,QC
```

PRINT A DOC

A Print Utility

By Ed Machonis
QB-99'ers, Bayside, NY

If you haven't hugged a tree lately, you may not appreciate this program. It all started innocently enough when a fellow group member informed me that he was having trouble printing out the -READ-ME file on the MAC-LABELS disk. The file had been written to be read, not printed. It could be printed from TI-Writer's Editor, but the printout would be in 40 columns, wasting lots of paper. Reformatting the file required a degree~ of expertise not all users possess.

It looked like a simple matter to write a TIny BRAM to print out the file; simply read two consecutive lines and then print them side by side. But looks can be deceiving and nothing is ever really simple. While the idea worked great on the -READ-ME file, it fell flat on its face when tried on other 40 column files. Blank lines, lines with only carriage returns (which are not blank lines), lines with leading and trailing spaces and program listings, all created their own little problems.

Providing for all these contingencies nearly doubled the size of our original TIny Gram, but the program is still only 5 sectors long, loads quickly and is easy to type in. It will print out most 40 column DV80 files in 80 columns while leaving plenty of margin for 3 hole punching. It works best with files that have had the right margin adjusted and control codes deleted but will do a pretty fair job on most others.

An option is provided to pause at the end of each page to permit cut sheet users to insert a new page or even turn the page over for printing on the other side. Just press enter when you're ready to continue.

For continuous form users, top of form is set by the program so set the paper to start printing just a couple of lines below the perforations. A form feed will be sent at the end of each page. For minimum paper usage, the Docs are printed 60 lines to the page, however, if a paragraph ends within 5 lines of the bottom of a page, the next paragraph will start on the next page. This minimizes the chance of a paragraph being broken over two pages.

Coded for Epson or Epson compatible printers. The printout is in Elite type style.

When typing in Line 4, the ninth character on the last line is a lower case letter el, not the figure one. The last character on that line is the figure one.

```
1 ! ***** PRINT A DOC *****
    *   By Ed Machonis    *
    * QB99ers Bayside, NY *
    * Prints 40 Col DV80  *
    **Files in 80 Columns**

2 DISPLAY AT(9,1)ERASE ALL:"
FILENAME? DSK1.-READ-ME" ::
ACCEPT AT(9,11)SIZE(-15):D$

3 C$=CHR$(13):: INPUT "PAUSE
 END OF EACH PAGE?(Y/N)":P$

4 OPEN #1:D$,INPUT :: OPEN #
2:"PIO",VARIABLE 96 :: E$=CH
R$(27):: PRINT #2:E$&"@";E$&
"M";E$&"1"&CHR$(8):: L=1

5 LINPUT #1:A$ :: IF EOF(1)T
HEN PRINT #2:A$ :: GOTO 12 E
LSE X=POS(A$,C$,1):: IF X>0
AND X<5 THEN A$=""

6 IF A$=" " OR A$="" THEN 11

7 LINPUT #1:B$ :: IF EOF(1)T
HEN PRINT #2:B$ :: GOTO 12 E
LSE IF SEG$(B$,1,3)="   " AN
D LEN(B$)>34 THEN PRINT #2:A
$ :: A$=B$ :: GOTO 7

8 IF SEG$(B$,1,1)=" " AND LE
N(B$)>34 THEN B$=SEG$(B$,2,L
EN(B$))

9 IF (LEN(A$)<35)+(LEN(B$)<3
5)THEN PRINT #2:A$;B$ :: L=L
+2 :: IF L>59 OR(L>55 AND B$
=" " OR B$="")THEN 12 ELSE 5

10 PRINT #2:A$;" ";B$ :: L=L
+1 :: IF B$="" OR B$=" " THE
N 11 ELSE IF L>59 THEN 12 EL
SE 5

11 PRINT #2 :: L=L+1 :: IF L
<56 THEN 5

12 IF EOF(1)THEN END ELSE IF
 P$<>"Y" THEN PRINT #2:CHR$(
12):: L=0 :: GOTO 5

13 INPUT "PRESS ENTER WHEN R
EADY ":G$ :: L=0 :: GOTO 5
```

HEAVY DUTY DISK SLEEVE

BY ALLAN COX

I recently made some back-up copies of some disks that had more than 50 files on them. I use the DISK SLEEVE PRINTER, written by Randy Baxter and Revised by Cecil Crowder to print the filenames and make the sleeve. I have quite a few disks that I have made sleeves for using this program. Over the years the sleeves have shown wear, and some need replacing. aThen it occurred to me that I could make a sleeve that would last much better than just the paper sleeve. This is what I did:

Using the above program, I printed the catalogue for each disk. I then cut the outline of the sleeve out, just as I had done in the past. I then put rubber cement on this and glued the sleeve outline to a piece of 110 # index card stock, 8 1/2" X 11". I then cut the index car stock around the outline of the sleeve. Next, I folded it at the dotted line midway of the sleeve, forming the front and back of the sleeve. I then folded each side tab to the back, applied glue to each tab, and glued them to the back of the sleeve. The sleeve is now complete.

The 110# index card stock that I used is light blue, and it is also available in other colors, and is available at stationery supply stores. I was really pleased with how my first sleeve turned out, and thought you might have a need of them yourself.

```
 6R/1              =DISKNAME : DRAFTIN/6R  2   INT/VAR254   :MAN/DT      4   INT/VAR254
 AVAILABLE= 35   USED=323    : DUTRDW/6R  2   INT/VAR254   :MAN2/DT     17  INT/VAR254
 FILENAME   SIZE   TYPE    P : ENGINE2/6R  2   INT/VAR254   :MARY/DT     3   INT/VAR254
 ---------  -   --------  - : FISHIN6/6R  2   INT/VAR254   :MECANIC/6R  2   INT/VAR254
 3D/CH      23  INT/VAR254   : FIXIT/6R    2   INT/VAR254   :MICKEY/DT   5   INT/VAR254
 ABC/CH     7   INT/VAR254   : FLORIDA/6R  2   INT/VAR254   :MUSIC/6R    2   INT/VAR254
 AIRPLAN/6R 2   INT/VAR254   : FLOWER1/6R  2   INT/VAR254   :NOSIGN/6R   2   INT/VAR254
 APPLE/6R   2   INT/VAR254   : FLOWER2/6R  2   INT/VAR254   :NOTES/6R    2   INT/VAR254
 ARK/6R     2   INT/VAR254   : FLOWER3/6R  2   INT/VAR254   :NURSE/6R    2   INT/VAR254
 ASTER/6R   2   INT/VAR254   : FLOWER4/6R  2   INT/VAR254   :OAKTREE/6R  2   INT/VAR254
 AUTOS/6R   2   INT/VAR254   : FOOTBAL/6R  2   INT/VAR254   :OFFBEAT/CH  3   INT/VAR254
 BANK/6R    2   INT/VAR254   : FORCES/6R   2   INT/VAR254   :OHIO/6R     2   INT/VAR254
 BASBALL/6R 2   INT/VAR254   : GARDENR/6R  2   INT/VAR254   :PHOTO6/6R   2   INT/VAR254
 BFLY/6R    2   INT/VAR254   : GASPUMP/6R  2   INT/VAR254   :PIANO/6R    2   INT/VAR254
 BOWLER/6R  2   INT/VAR254   : GOLFER/6R   2   INT/VAR254   :PIANO2/6R   2   INT/VAR254
 BSBOLD/CH  12  INT/VAR254   : GOLIT/6R    2   INT/VAR254   :PLUMBER/6R  2   INT/VAR254
 BSKBALL/6R 2   INT/VAR254   : GYM1/6R     2   INT/VAR254   :POINSET/6R  2   INT/VAR254
 CABOOSE/6R 2   INT/VAR254   : GYM2/6R     2   INT/VAR254   :POPPY/6R    2   INT/VAR254
 CALENDU/6R 2   INT/VAR254   : GYM3/6R     2   INT/VAR254   :POSTMAN/DT  25  INT/VAR254
 CAMEL/6R   2   INT/VAR254   : GYM4/6R     2   INT/VAR254   :PUMPKIN/DT  4   INT/VAR254
 CANDLE2/6R 2   INT/VAR254   : GYM5/6R     2   INT/VAR254   :PUMPKIN/6R  2   INT/VAR254
 CARE/DT    7   INT/VAR254   : HBLAB/6R    2   INT/VAR254   :REALTOR/6R  2   INT/VAR254
 CARNATN/6R 2   INT/VAR254   : HMAKER/6R   2   INT/VAR254   :REXIT/6R    2   INT/VAR254
 CAT/6R     2   INT/VAR254   : HORSE/DT    9   INT/VAR254   :ROSE2/6R    2   INT/VAR254
 CHOCHO/CH  16  INT/VAR254   : HORSE2/DT   6   INT/VAR254   :RRCROSS/6R  2   INT/VAR254
 CHRYSAN/6R 2   INT/VAR254   : HORSES/6R   2   INT/VAR254   :SHADOW2/CH  23  INT/VAR254
 CIGAR/6R   2   INT/VAR254   : HOUSE2/6R   2   INT/VAR254   :
 CIN-DAY/6R 2   INT/VAR254   : HUNTING/6R  2   INT/VAR254   :
 COMPUTR/6R 2   INT/VAR254   : LAMB/DT     5   INT/VAR254   :
 CPLOGO/6R  2   INT/VAR254   : LARKSPR/6R  2   INT/VAR254   :
 DAFODIL/6R 2   INT/VAR254   : LAWYER/6R   2   INT/VAR254   :
 DENTIST/6R 2   INT/VAR254   : LECTRIC/6R  2   INT/VAR254   :
 DOCTOR/6R  2   INT/VAR254   : LEXIT/6R    2   INT/VAR254   :
 DOZER/6R   2   INT/VAR254   : LOVETHY/DT  8   INT/VAR254   :
```

TI-BASE - From INSCEBOT

TUTORIAL 18.1.1 By Martin Smoley

NorthCoast 99'ers - April 21, 1990

This months project is quite insignificant as far as innovative programming techniques are concerned, but it concerns a utility which I have wanted to create for a long time. This is the simple ability to type in the data for a mailing label and print the label and/or save the data for later use. I know this sounds untrue, but as many times as I have thought to myself that I should whip something up to do this task, I haven't! So this month I'm going to take care of my problem and drag you along for the ride. NOTE: There are some other reasons for this project which I will try to explain later.

I whipped up INPUT/C, which you see to the right. For those of you who are still struggling, it was not nearly as easy as I make it sound. It took forever to get those IF statement to work the way I wanted, and I kept using more LOCALs than I was allowed. I would also add that every CF I have, should be called a semi-finished product. Almost every time I use a CF I can see something I'd like to change. Here are a few tricks I used in INPUT that you might find interesting. First I set up LOCALs to handle the keyboard input. This allowed me to print a label even if I didn't save the data to the Db. Next, I used the data from RECord 0 as headings for the input screen. The use of RECord 0, coupled with the fact that the only direct connection between INPUT and your Db is made in the Sub-CF(INPSV) means that it should be quite easy to adapt INPUT to any Db you may be using.

CREATED 04/06/90 CHANGED 04/06/90

FIELD	DESCRIPTOR	TYPE	WIDTH	DEC
1	NM	N	004	00
2	LN	C	015	
3	FN	C	015	
4	MI	C	002	
5	NL	N	004	00
6	SA	C	025	
7	CT	C	020	
8	ST	C	002	
9	ZP	C	005	
10	PH	C	012	
11	XP	D	008	
12	ID	C	007	

000 1 TNAMES9000000/00002

I have modified our old standby database TNAMES to accomodate thoughts for future projects. It is not necessary for you to make these changes. The CFs should work fine with the original Db. You can change the name of the Db used in INPUT and let it go at that. I will not place more than a few names in our DEMO Db so a conversion can be made at any time.

CONTINUED NEXT PAGE

```
*                          INPUT/C
CLOSE ALL
 SET TALK OFF
 CLEAR
 WRITE 9,4,"                    .. LOADING .. "
LOCAL IFN C 15
LOCAL IMI C 2
LOCAL ILN C 15
LOCAL ISA C 25
LOCAL ICT C 20
LOCAL IST C 2
LOCAL IZP C 5
LOCAL IPH C 12
  USE DSK1.TNAMES90
* you can use the original TNAMES
LOCAL INP C 2
  DO DSK1.INPSC
WHILE (INP<>"Q ").AND.(INP<>"q ")
 WRITE 5,1,">                          <>  <";
           ">                          <"
 WRITE 9,1,">                                <"
 WRITE 13,1,">                            <";
           ">  <>      <"
 WRITE 17,1,">                 <"
  READSTRING 5,2,IFN
  READSTRING 5,19,IMI
  READSTRING 5,23,ILN
  READSTRING 9,2,ISA
  READSTRING 13,2,ICT
  READSTRING 13,24,IST
  READSTRING 13,28,IZP
  READSTRING 17,2,IPH
 WRITE 22,2,"Selection ==> R              ";
"                "
 READSTRING 22,16,INP
 WRITE 22,16," ..... PROCESSING ..... "
  IF (INP="Q ").OR.(INP="q ")
    CLOSE ALL
    RETURN
  ENDIF
  IF (INP="S ").OR.(INP="s ")
    DO DSK1.INPSV
  ENDIF
  IF (INP="P ").OR.(INP="p ")
    DO DSK1.INPLBL
  ENDIF
  IF (INP="SP").OR.(INP="sp")
    DO DSK1.INPSV
    DO DSK1.INPLBL
  ENDIF
 WRITE 22,16,"                                "
 REPLACE INP WITH "R "
ENDWHILE
CLOSE ALL
SET HEADING ON
SET RECNUM ON
SET TALK ON
RETURN Copyright Martin A. Smoley 1990
```

Database TNAMES90

REC	NM	LN	FN	MI	NL	SA	CT	ST	ZP	PH	XP	ID
0000	0	Last Name	First Name ...	MI		Street Address	City	ST	Zip	Phone	/XP/	ID No.
0001	1	Smoley	Martin	A.		6149 Bryson Drive	Mentor	OH	44060	216-257-1661	/ /	MS44612

TI-BASE - From INSCEBOT

TUTORIAL 18.1.2 By Martin Smoley

NorthCoast 99'ers - April 21, 1990

Another possibility would be to use RECord 1 to blank the previous on-screen entries and set the length of each entry. That would allow you to create a universal input screen that would change its characteristics depending on the database that was opened. Changes could be handled by a Sub-CF that was called by a number stored in the 0 RECord and the use of a DOCASE. If this is a little too much for you, just use INPUT as a simple data entry CF and forget about the extra junk. Entering the data into the screen is more user friendly then using EDIT and I like to be able to use upper and lower case letters for commands. The CF will keep you posted as to what it is doing and it will automatically assemble an ID number for a name which is saved. The only automatic feature is the creation of NM by the INPSC CF. You will notice that it finds the last value for NM and makes the newest entry one number higher than that. This keeps the last entries at the end of the Db, no matter what their sort order should be. At the end of an entry session you should run the CF named INP'RN. This CF will sort our Db on Last Name, First Name, renumber the NM field and then re-sort on the NM field. This is the way I like TNAMES90 sorted, you may have another idea. You should note that I have placed one blank space at the beginning of many of the RECord 0 fields. This will return that record to the head of the Db when sorting on those fields.

```
        ENTER INFORMATION                INSTRUCTIONS
  First Name ...  MI   Last Name ....
>              <> <>               <  Enter the data between
                                        the greater than ">"
  Street Address .........              and less than "<" signs.
>                        <            Press ENTER after each
                                        item is entered, First
  City ..............  ST   Zip       Name <E>, Middle Initial
>                    <> <>    <       <E>, Last Name <E>, etc.
                                        When all the data is
  Phone .....       SELECTIONS        entered you can select
>             <     Q or q Quit       Save, Print, SavePrint,
                    S or s Save       Redo or Quit. When you
                    P or p Print      make a single character
                    SP or sp Save Print entry, the character
                    R or r Redo       must be to the left and
                                      the blank space must be
 Selection ==> R                      to the right.
```

```
* renumber NM field  INP'RN/C
CLOSE ALL
LOCAL NUM N 4 0
USE DSK1.TNAMES90
SORT ON LN,FN
TOP
WHILE .NOT. (EOF)
 REPLACE NM WITH NUM
  MOVE
REPLACE NUM WITH NUM + 1
ENDWHILE
SORT ON NM
CLOSE ALL
RETURN Copyright Martin A. Smoley 1990
```

```
*                                INPSC/C
 SET HEADING OFF
 SET RECNUM OFF
 FIND 0
 WRITE 1,12,"ENTER INFORMATION"
 WRITE 3,2,FN
 WRITE 3,19,MI
 WRITE 3,23,LN
 WRITE 7,2,SA
 WRITE 11,2,CT
 WRITE 11,24,ST
 WRITE 11,28,ZP
 WRITE 15,2,PH
 WRITE 15,20,"SELECTIONS"
 WRITE 17,20,"Q or q Quit"
 WRITE 18,20,"S or s Save"
 WRITE 19,20,"P or p Print"
 WRITE 20,20,"SP or sp Save Print"
 WRITE 21,20,"R or r Redo"
RETURN Copyright Martin A. Smoley 1990
```

```
*                                INPSV/C
 WRITE 22,16," ..... SAVING DATA ..... "
LOCAL INM N 4 0
LOCAL FIN C 1
LOCAL LIN C 1
LOCAL PZ C 2
LOCAL AS C 2
BOTTOM
REPLACE INM WITH NM
APPEND BLANK
 REPLACE NM WITH INM+1
 REPLACE FN WITH IFN
 REPLACE MI WITH IMI
 REPLACE LN WITH ILN
 REPLACE SA WITH ISA
 REPLACE CT WITH ICT
 REPLACE ST WITH IST
 REPLACE ZP WITH IZP
 REPLACE PH WITH IPH
  REPLACE FIN WITH FN
  REPLACE LIN WITH LN
  REPLACE PZ WITH ZP
  REPLACE AS WITH SA
REPLACE ID WITH FIN ! LIN ! PZ ! AS ! PH
RETURN Copyright Martin A. Smoley 1990
```

```
*                                INPLBL/C
SET PAGE=000
LOCAL TEMP C 40
WRITE 22,16," ... Printing Label ..."
     PRINT (Drft),(E),(LF)
   REPLACE TEMP WITH TRIM(IFN) ! " ";
           ! IMI ! " " ! ILN
     PRINT TEMP
     PRINT ISA
   REPLACE TEMP WITH TRIM(ICT) ! ", ";
           ! IST ! "  " ! IZP
     PRINT TEMP,(LF),(LF)
RETURN Copyright Martin A. Smoley 1990
```

Continued Next Month.

TI—BASE - Version 3.0

INSCEBOT inc.
P.O. Box 291610
Pt. Orange, FL 32119

Preview . . .

By Martin A. Smoley

Yes, I said Version 3.0

First I must do a little explaining about tutorial 18.1.1 and 18.1.2. The CFs in that series are OK and should be quite useful, but my presentation and explanation were a little short. The situation was, that I had already decided on a major direction change for the tutorial subject matter and had completed a large portion of the work on the first tutorial when I received the new version 3.0 of TI-Base for beta-testing. After looking over the new material I decided that I could not publish even the first segment of the new tutorial without including and testing the newest release of TI-Base. So I threw the INPUT Tutorial together to allow myself more time to work with the new TI-Base. I hope I have not disappointed our readers.

Now let me give you a little idea of what's coming in the new TI-Base version 3.0. The Device directive, such as DSK1.TNAMES90, has been expanded to 29 characters. This is important if you are using a hard drive. The use of variables has been expanded. If you place the number 8 in a variable named A, you can now use MOVE A as a valid expression, etc. TIB will now search for a sub-string within a string and return that string if the sub-string is matched. TIB now has a LENgth function that will count the number of characters in a string variable. This is big, "SUBSTR(VARIABLE,START,LENGTH)". SUBSTRing will extract part of a string, STARTing at a specified point and continuing for a specified LENGTH. This is like SEG$ in Extended Basic. You can now DELETE RECORD ;FOR (?=?). And, you can SUM or AVERAGE (yes AVERAGE) to a variable. (SUM SUBTOT TO TOT ;FOR SUBTOT>50.00). "This is really the biggest news so far." The ability to set up a special database as a REPORT form. Within this database you can have sections that tell TIB what you want it to do. In the SETUP section you can tell TIB to SELECT several different slots and USE several different databases. You can reSET the status (SET RECNUM=OFF, etc.) and initialize variables (LOCAL PA 4, etc.). Then TIB will move to HEADER which can print a letterhead, page number or other items as a heading for the report. TIB will then print up to three BODY fields, each of which can contain as much data as you can extract from the records current in the slots that are in use. This means, if you had opened 5 databases in the 5 slots and aligned them with FIND directives, and if each database had 17 fields, you could print any of the 85 pieces of information available in each of the 3 BODY functions of the report. "Not Bad!" The NEXT function allows you to MOVE and re-align all the Dbs before another pass through the BODY section. NEXT BODY 1, BODY 2 and BODY 3 will be repeated until an EOF is encountered. FOOTER will print footnotes in the same manner as HEADER and CLEANUP will CLOSE ALL and reSET the STATUS to whatever you wish at the end of the report. I will restrict myself to a half page for this 3.0 review so there are many things I can't tell you about, like MACRO instructions stored in VDP RAM or direct keyboard input of Control Codes from 0 to 255, or even MODIFY STRUCTURE without losing all the data in the database. 3.0 should be out in May so if you use TI-Base get ready to buy this new version.

Good Luck. Marty.

OK, so I can't wait. I've got to tell you a little more about Version 3.0. Macro Instructions have got to be one of the big new features in TI-Base. A Macro, or Macro Instruction is roughly, the ability to execute a large command, or a large group of command, with a single keystroke or a very short key input. TI-Base Version 3.0 has that capability. It's a little repetative to set up a large number of Macros, but once you've done it the rewards are great. Dennis has set up a usable area in VDP RAM which is handled by the phrase INSTALL. You should think of the word INSTALL more as the name of the area and not as a command. The things which you can do to the INSTALL area are CLEAR, ADD, REMOVE, CATALOG, LOAD and SAVE. You must create a command file on disk for each Macro Phrase you want to use. For example, I entered MODIFY COMMAND DSK1.\MC. This created the CF named "\MC" on disk drive #1. When the Edit screen appeared I entered two words "MODIFY COMMAND" and I pressed <FCTN 9> to save the CF. I did not enter any comments or place RETURN at the end of the CF. Then, at the dot prompt I entered INSTALL ADD DSK1.\MC. TIB retrieved the CF named "\MC" from DSK1 and placed its contents (MODIFY COMMAND) in the INSTALL area under the name "\MC". This allows me to execute that command by simply typing \MC at the dot prompt. This may not seem like much at first, but here's the big picture. TIB can execute many individual command from VDP by their names and a Macro can be as large as a Command File. I created each of the Command Files you see here under their individual filenames and used the ADD directive to place them all in VDP at the same time. After that I entered INSTALL SAVE DSK6.INST. TIB SAVEd the complete INSTALL group to DSK6.INST, with the suffix "/I". Next, I added the line "INSTALL LOAD DSK6.INST" to my SETUP CF. This tells TIB to automatically LOAD all the commands when TIB is powered up. I haven't tried it yet, but I think that you should be able to stack up your ADD commands in a CF to make it easier to modify the overall INSTALL package. The number and size of Macros placed in VDP are only limited by space, which is currently 2546 Bytes. With everything you see here loaded into INSTALL I still have 2082 Bytes left. "Not Bad!" This Macro package means a lot to non-ramdisk users, because the execution is very fast compared to disk access. You could load several large CFs, which you use often, into INSTALL and execute them when needed. If you're doing anything with TI-Base now you will love the newest version. It's twice as big as when it started.

```
filename \MC
MODIFY COMMAND

filename \DS
DISPLAY STRUCTURE

filename \DST
DISPLAY STATUS

filename \IC
INSTALL CATALOG

filename \RES
SET DATDISK=DSK6.
SET PRGDISK=DSK5.
SET PRINTER=PIO.CR.LF
SET PAGE=000
SET HEADING ON
SET TALK ON
SET SPACES=01
SET RECNUM ON
SET LSPACE=256
CLEAR LOCAL
SET CURSOR=02
SET CRLF ON
CLEAR
DISPLAY STATUS
INSTALL CATALOG

filename \DSPA
PRINT (Drft),(E)
DISPLAY STRUCTURE
SNAP
PRINT (Drft),(f)
PRINT ALL
```

If you would like to update your current TI-Base or purchase it for the first time, you can write directly to:

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