MEMBERSHIP 10

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Issue 5 # # Votume 12 << YOUR KANSAS CITY USER FRIENDLY GROUP >>

DEM ISSING

when you have tinished writing a program, the next thing you should so is to run it. And, very probably, it will crash! Don't be discouraged. it nappers to the very best of programmers, very often. So, the next thing to do is to debug it. And you are lucky that you are using a computer that helps you to debug better than some that cost ten times as auch.

There are really three types of bugs. The first type will prevent the program from running at all - it will crash with an error message. Ine second type will allow the program to run, but will give the wrong results. And the third type, which is not really a bug but might be mistaken for one, results from trying to run a perfectly good program with the wrong hardware, or with faulty hardware. As for instance, trying to run a pasic program, which uses character sets 15 and 16, in Extended PESIC.

First, let's consider the first type. The smart little TI computer sakes three separate checks to be sure your program is correct. First. when you key in a program line and hit the Enter key, it looks to see if there is anything it can't understand - such as a misspelled command or an unmatched quotation mark. If so, it will tell you so, most likely by SYMIAX ENKOR, and refuse to accept the line. Next, when you tell it to fur the program. It first takes a quick look through the entire program. to find any combination of commands that it will not be able to perform. inis is when it may crash with an error message telling you, for instance. that you have a NEXT without a matching FOR. or vice versa. And finally, while it is actually running and comes to something that it just car't do, It will crash and give you an error message - probably because a variable mas been given a value that cannot be used, such as a CALL HCHAR(R.C.52) when K happens to equal V.

The li has a wide variety of error messages to tell you when you did something wrong, what you did wrong, and where you did it wrong. But, it can be topied! For instance, try to enter this program line (note the sissing quotation mark). 100 PRINT "Program must be saved in: "merge TOTMAT.

And, sometimes you may be told that you have a STRING-NUMBER MISMATCH when there is no string involved, because the computer has tried to read a carbied statement as a string.

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K.C. 99'ER CONNECTION

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CLASS

SECTION 1793

OUR #/A UNIVERSITY

by Jack Suchrue Box 459, E. Douglas MA 01516

#3 DOCENTS

LO MODE UNE LUCOS

you beoble up back, let's have your attention up here! Save your questions until the end, as I'll probably answer them along the way, anyway.

rist, make sure you have your notebooks open and pens at the ready. There are jots of important names and addresses :'ll be giving out. Unity once. So, if you miss them the first time, it's as the french say. "Yee tough cookie."

Second, in my hand I have a SOFTWARE EXCITEMENT Catalog. These \$2 catalogs are for the IBM compatibles, Amigas, Macs, Commodores, and monles. They are typical of the user-supported shareware-type catalogs for those machines, most of which contain the same items no matter who publishes them. Let's look at what they have to offer for \$4 per industry! If you buy a dozen programs they go for \$3 each. 20 brings the price down to \$2.50. When you order more than 50 of these programs the price gets down to \$2 each. Plus shipping charges and a \$3 handling and packing tee. But there are only 30 educational programs total, pre-school through coilege, anyway, so you couldn't even order 50 educational programs if you wanted to. But one has to be careful, even if you have a dozen children from ages 3 to 23. AMEMCMP (a memory game), tor example, requires 640K (YES: 640!), a VSA or ESA monitor, AND a hard drive. Whew! Sure makes our ittle, very inexpensive, J2K TIs with single/single prives look puny, doesn't it? Or does it? What does this program do? You match up hidden pairs. It's a fancy variation of

There is also a program called WORD GALLERY which helps children associate the printed word with the object it describes. (Doesn't that sound a bit like a rew cartridges TI made about a decade ago?) There are also math programs that teach counting, addition, and subtraction through endiess patience and some graphics and games. (Nore cartridge detains) incre's also french and Spanish tutorials. And so on-

Anyway, 11 you have use for any such fanciness or even ALL of these su programs. They will cost you about \$70.

Now, we'll begin with THE important educational resources of today's American Ti Community. As I'm not reading from my full notes today, Class, I'm atraid I'll be leaving out a tew important resources unintentionally. Consider checking this out and locating the missing sources as part of your assignment for next time.

heanwhile, let me start with some comparisons to this \$2 shareware catalog in my tand. There's a wonderful programmer and writer in Columbus by the name of Jim Peterson. He has a one-man company which has no equal for any other computer in the country. It's called TIBERCUB SOFTWARE (156 Collingwood Ave., Whitehall, OH 43213) and offers disks at \$1.50 each (postpaid for 8 or more). Disks! Not programs. And he has over 550 different disks. Jam-packed full of the best authors in the TI world, arranged by category and auto-loaded from a super menu. We're taiking THOUSANDS of Public Domain and Shareware programs. Let's look under equation, for example, where, along with the games sections,

vou can ting not 30 but #HOUSANDS of programs, various Concentrations just being a smidgeom of these. For example, there are three disks full or programs sust for Vocabulary & Reading and 15 DISKS! sust for math to make a couple). Here are the programs from just ONE of these vocabulary & Reading disks: Adjective to Adverb, Noun to Adjective. Learning to 'ing it. Plural Endings. Animal Multitudes. Doctor Who. vocabulary, vocabulary Guiz, Syllables, Reading Fractice, Speed Reading, lense lime, Synonyms & Antonyms, Read-Fast, and Vocabulary II. Fifteen educational programs for \$1.50! Or. in this case, just 10 CENTS A recorder: : : ur, put another way, about 30 programs for \$3, instead of \$70. as is the (ase with the "other" computer.) In addition to some neat graphics, spac of these programs have real speech! All for a dime. Noching's been a dime since Nixon took us off the gold standard: not a pack of que , not a comic book, not a candy bar. But now, thanks to Jim recerson and TISERCUB, the dime has returned to those fortunate enough to own a TI-99/4A. Top quality for wonderful prices. To get his catalog (\$1 deductible on first order) is like rolling Chanukah. Kwanzaa, Crristmas, Druidic Solstice, and 55 Birthdays all into one computing event.

I tell you. Class, it 'll make your mouth water.
But where was I? Oh, yes, TI resources for educational goodies.
Er, tools. Educational tools and materials. Obviously, if you own a disk grive. TINEFRCUS is an enormous resource.

The next best resource is an active user group. Makes no difference if you live in East Douglas or Venedocia (if there really are sum places), you can make the connection by joining by mail. I belong to a +ew user groups. In addition to monthly newsletters, which keep me very intemped and up to date on TI matters of importance. I am also attorged the opportunity of participating in the treasure chests called Club Cioraries. I'll use the Lima, Ohio, group as an example. (Lima us, r.u. bcx 64/. Venegocia, úmio, 45894). For my \$15 dollars a year I receive a runimaly newsiteter or original articles, reviews, advice, programs, you-name-its. Also I automatically receive important updates of runnelmen, the most used piece of software in the TI disk world.] have access to a zillion world-wide newsletters and other pieces of textware, not to mention the expertise of a truly sharing collection of naro-working, triendly Yvers. I am also entitled to the free library of cassettes and disks put together by this small, dedicated contingent of If goodfellas (and mais). This means that I can look over the immense LINA catalco at my home in Massachusetts and send cassettes and postage or disks and postage and get ANYTHING I want for mada, zilch, zero. crippage 19, nothing. Best that one, Kiddos!

uops: As i was saying, we must look into our educational resources. Inere are many other user groups, too, Class. My local M.U.N.C.H. (560 Lincoin Street, P.O. Box 7193, Worcester, PA 01605) is probably my best personal resource, as I attend our monthly meetings and fairs and so on, we do lots of demos and hands-on type things and help each other whenever possible. Anyway, Class, if you can find a local group you can oo to for meetings, that's another great resource, but at least join one by mail if there are no locals.

And attend at least one TI Fairs somewhere once a year, even if (as 1 do) you have to travel over 800 miles. It's worth it for all the ... If you'd hold the talking down back there, it would be greatly appreciated. We're running out of time, and I did want to ...

Ukay, Mr. Shakespeare, what is the question? I suppose that's the only way I can get you to stop waving your hand.

Listen up, Class! Listen up! Mr. Shakespeare over by the window wants to know about some of the educational software. He says he has a neonew in (unior nigh who is having trouble reading and two grand—daughters who are 8 and 4, respectively, and wants to know what the 11 can do for him.

SEFIULI 1773

ves, yes, ms. Bronte, I AM going to tell you about aducational software for people our age, too, but we won't be able to get into too much of that for a few sessions.

kight now, though, I'd just like to tell you about a few people who had some visions. It might help.

Terrie Masters, who used to be president of the Los Angeles group, Spoke to me a new years ago about doing some educational networking with our T1 educators. I've also discussed the same thing more than once with Charles Good (Lima UG). And Sister Pat Taylor (1050 Careel Drive #456. Dubuque, Iowa, 52001). And John Willforth (RFD #1, Box 73A, Jeannets, PA 10044). And Janet Ryan and her daughter Jennifer(10 Jolly Road. Ellington, CT 96029). And Mickey Schmitt (196 Broadway Ave., Lower Burrell, PA 15368). And Mike Wright (45 Centerville Drive, Sales, NH 03079). And JLM Horn [EXTENSIVELY] (P.C. Box 244, Lorton, VA 22079). And Kodger Merritt (1949 Evergreen Ave., Fullerton, CA 92635)). And tellow elementary teacher Phil Towensend (c.o. Lawartha 99ers, 224 woodward Ave., Peterborough, Ontario, Canada, KSL 1J7). And Eunice Spooner (weep koad, Bo) 3720, Waterville, ME 04901). And Barry Traver 1850 creen valley prive, Philadelphia, PA 19128). And O-TEN with Jim reterson. Hnd. once with educational programmer Don Shorock (F.O. Box but, wreat Benj. RS 6/550). And very often with Chris Bobbitt even perore ne rounsed Asonků tř.ů. Box 10300, Rockville, MD 20850). And piles of teachers and interested parents and grandparents.

An educational network has been a hot topic for many years in our community. His a matter of fact, ferrie mentioned a teacher by the name of downwarmer (Box Dis, Mt. Baidy, CA 9:759, whose daughter is a pilot an Was in the recent winter olympics as a "lugist", one of those increcipie sleaders; who was bent on getting a network going. This past year doy flew all over America trying to help Terrie's dream come true by meeting with as many liers as she could meet during her whirlwind tour.

one discovered, as I did, that there is already much of that network in place and ready to connect. Jim Peterson has his TIGERCUB marvel. Charlie has been testing (with his own wonderful tykes) all kinds of marvelous and rare TI educational programs from Milliken, scholastic. Disney, and so on. Mike and Charlie, along with Gary Taylor from Fittsburgh have been competing for ownership of the ultimate TI Lollection (in fable known as the TI Grail). Eunice Spooner not only runs the only mil-kids TI user group in America but has the best LOGO video and disk program money (\$10) can buy. Bill Gaskill and Ron Hibricht have been (to our 99 history) the best thing to happen to us. Bill still is. Dick Altman's wonderful Fairware List is now in the capable nands of Ida McCarqar of the Southwest \$9ers (P.J. Box 17831, Tucson, AZ 85730).

Un, sorry, Ms. Bronte, I didn't notice the time. Anyway, keep this list. It's important when it comes time for the final. Guaranteed this material will be on it.

DIG I mention NUTUNG? Or Tex-Comp? Or COMPRODINE? Or MICROpendium? Or Recena? I bidn't mention Recena? Guick. Write down REGENA, 918 Cedar Knolls west, Gedar Lity, UT 84720.

the acove is recrimted from the VAST NEWS newsletter of April 1993

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Also, the line number given in the error message is the line where the computer found it impossible to run the program; that line may actually be correct but the variables at that point may contain bad values one to an error in some previous line.

K.C. 99*EF CONNECTION

It the error occurs in a program line which consists of several statements, and you cannot spot the error, you may have to break the line into individual single-statement lines. This is the essiest way to do that - be sure the line numbers are sequenced far enough apart. Bring the problem line to the screen, put a ! just before the first ::, and enter it. Bring it back to the screen with FCTN 8, retype the line number 1 nigher, use FCIN 1 to delete the first statement and the ! and ::, put a ! Defore the first ::, and continue. Then, when you have solved the buggest delete the ! from the original line and delete all the temporary lines.

Pages 212-215 of your Extended Basic manual list almost all the error codes, and almost all the causes of each one - it will pay you to consult these pages rather than questing what is wrong,

Tou may create some really bad bugs when you try to modify a program that was written by someone else - especially if you add any new variable names or UHLLS to the program. Your new variable might be one that is aiready being used in the program for something else, perhaps in a subscripted array. I have noticed that programmers rarely use ^ in a variable hase, so I siways tack it onto the end of any variable that I add to a proprias. Hiso, the program that you are modifying may have ON ERROR routines, or a prescan, already built in. The ON ERROR routine was intended to take care of a different problem than the one you create, so it could lead you har astray - you had better delete that ON ERROR statement until you are through modifying. The prescan had better be the subject of another lesson, but if the program has an odd looking command :r- up near the front somewhere, it has a prescan built in. And if so, if you add a new variable name or use a CALL that isn't in the program, you will get a SYNTAX ERROR even though there is no error. One way to solve this is to insert a line with !P+ just before the problem line, and another with !P- right after it.

when a program runs, even though it crashes or is stooped by FCTN 4 or a beach, the values assigned by the program to variables up to that point will remain in memory until you RINN again, or make a change to the program, or clear the memory with NEW. This can be very useful. For instance, if the program crashes with BAD VALUE IN 680, and you bring line out to the screen and finds it reads CALL HCHAR(R,C,CH) just type PRINT Killum and you will get the values of R, C and CH at the time of the crash. You will ind that R is less than if or more than 24, or C is less than I more than 32, or CH is out of range. In Extended Basic, you can even enter and run a multi-statement line in immediate mode (that is, without a line number), if no reference is made to a line number. So, you can dump the current contents of an array to the screen by runk upi IU 100 :: PRINT A(J); :: NEXT J - or you can even open a disk file or a printer to dump it to.

You can also test a program by assigning a value to a variable from the immediate mode. If you skick a program, enter A=100 and then enter Lun. The program will continue from where it stopped but A will have a value of 100.

YOU can temporarily stop a program at any time with FCTN 4, of course

(Lontinued Ch.Dage 6)

SEP/ULF 1773

THE BLOODBANK

by

Waiter Blood 2032 N. 32nd St. Kamsas City. KS 66104 (913) 371-1092

Sept/UCt 1993

mere's another effect at computerizing another hymn from the United methodist Hymnai. "beek we Frist." I hope you enjoy it!

1 FOR SAVE USKZ, SEEKYEIST YU LALL LIERK 100 PRINT (ABOB): "SEEK YE FIRST"::::::::::TAB(7): "Words and music" 110 PRIN: : (ABI/); "Karen Lafterty": [::::::::::::: 120 PKIN1 148(5): "TI99/4A translation":::TAB(5): "by WALTER H. BLOOD"::::: ZUU DIM M(4U), B(4U), C(40), D(40) 210 FUR K#1 10 40 $220 \text{ READ A(K)} \cdot B(K) \cdot C(K) \cdot D(K)$ 230 NEXT K 240 I=42 280 FOR J#1 10 2 ZYU UN U GUSUB DÜÜL 600 JUU FUK K#1 1D 4U SUY LALL SUUND (TXA(K), B(K), O,C(K), O,D(K), 10) SZU NEXT K SZS NEXT J SOU CHEE CEEAR JAU END SOU LAKE LILERS STO PRINT THE COTT "SEEK YE FIRST": ::::::: DIV PRINT "beek ye first the kinddom of"::::"God and his righteousness." TAU PRINT : "and All these things shall"::: "be added unto you." 340 FRINE I THILEIU. ALIBIULA!"::::::::::::: SSU RETURN SUU LALL LILENK STU PRINT THE (B): "SELK YE FIRST": 1111111 OZO MKINI I"HSK, and It Shall be"Ill"given unto you;":::"seek and ye shall f GOU PRINT : TKNOCK, and The GOOF ": 11" shall be opened unto you." 640 PKINI 1"HILEIU, MILEIULA!"ITITTE ADU RETURN 1000 DATA 40,370,294,220,20,370,294,220,20,392,294,220,40,440,277,220 1010 DATA 20,570,277,220,20,330,277,220,20,294,9000,195,20,247,9000,147 1020 DHTH 20, 274, 9000, 176, 20, 330, 294, 247, 80, 370, 294, 220, 40, 392, 294, 247 1030 DHTH 20,440,274,277,20,392,294,247,40,370,294,220,20,392,294,247 1040 DRIA 20,570, 294,220,40,330,294,196,40,330,294,196,80,440,277,196 1050 DATA 40.5/0.294.220.20.370.294.220.20.392.294.220 1060 DRTH 40,440,277,220,20,370,277,220,20,330,277,220,20,294,9000,196 10/0 DATA 20,24/.9000.147,20.294.9000.196,20.330.294.247.80.370.294.220 1080 DATA 40.392.294,247,20,440,294,277,20,392,294,247,40,370,294,220 1090 DATA 20,392,294,247,20,370,294,229,40,330,294,196,40,330,277,196 1100 DATA 80,294,220,165

tine manual says SHIFT C, but it was written for the old 99/4), and restart it from that point with LON. Or you can insert a temporary line at any point, such as 771 BREAK; if you want a break after line 970. Or, you can put a line at the beginning of the program listing the line numbers before which you want breaks to occur, such as 1 BREAK 960,970,980. Note that in this case the program breaks just BEFORE those listed line numbers. You can also EREAK followed by one or more line numbers as a command in the immediate mode. The problem with using BREAK and CON is that EREAK upsets your screen display format, resets the defined characters and colors to the default, and deletes sprites. So, it is sometimes better to trace the assignment of values to your variables by adding a temporary line to DISPLAY AT their values on some unused part of the screen. If you want to trace them through several statements, it will be better to busus to a DISPLAY AT. And if you need to slow up the resulting display, fust add a CALL KEY routins to the subroutine.

Dometimes, your program will appear to be not flowing through the sequence of lines you intended (perhaps because it dropped out of an IF statement to the next line!) and you will want to trace the line number flow. Inis can be gone with IKALE, either as a command from the immediate mode or as a program statement, which will cause each line number to print to the screen as it is executed. If used as a command, it will trace everything from the beginning of the program, so it is usually better to insert a temporary line with IRACE at the point where you really want to start. Unce you have implemented TRACE, the only way to get rid of it is with Unikhle. TRACE has its limitations because it can't tell you what is going on within a multi-statement line, and it will certainly mess up any screen display. Sometimes it is better to insert temporary program lines to display line numbers. I use CALL TRACE() with the line number between the parentheses, and a subprogram after everything else:

Some programmers use ON ERROR combined with CALL ERR as a debugging tool, but I can't tell you much about that because I have never used it. ON ERROR can give more trouble than help if not used very carefully, and I cannot see that UALL ERR gives any information not available by other means.

bonetimes you can debug a line by simply retyping it. It is only very rarely that the computer is actually interpreting a line differently than it appears on the screen, but retyping may result in correcting a typo error that you just could not see. In fact, most bugs turn out to be very simple errors.

when you are debugging a string-handling routine, don't take it for granted that a string is really as it appears on the screen — it may have invisible characters at one or both ends. Try PRINT LENGHS) to see if it contains more characters than are showing; or PRINT "**EMS&*** to see if any planks appear petwhen the asterisks and the string.

Inere is no standard way to debut a program. Each problem presents a challenge to figure GLT what is going wrong, to devise a test to find out what is really happening. Don't debut by experimenting, by changing variable values fust to see what will happen, etc. Even if you succeed, you will not have learned what was wrong so you will not have learned anything — and if your program contains lines that you didn't understand when you wrote them, you will have real problems if you ever try to modify the program. (Belive me, I speak from experience!)

the above artice reprinted from Suq-Sytes of May 1992 ine Newsletter of the 11-99/44 Brisbare (Australia) User Group Inc.