THE PUG PERIPHERAL

The Monthly Newsletter Of The
Pittsburgh User's Group
March, 1990

CLUB NEWS BY GARY TAYLOR

The annual election of officers will be conducted at the March meeting. As you may know I am not running for re-election as the club's President. I have been your President for the last 2 1/2 years and it is now time to pass the torch to new leadership. It has been a privilege to serve in this capacity and I hope that you will give the new administration as much support as I have had over the years. I will remain active in the club as the SYSOP of the bulletin board system and I am also on the ballot as the correspondence secretary.

I want to thank Bill Chavanne for coming to our February meeting and demonstrating Multiplan and his TI-Tax Package. It was an impressive demo. The club purchased a complete set of the package and will sell them to members for $1 per disk. You in turn are obligated to send Bill $5 for each one of the forms that you use.

At the meeting I will be conducting a class to show you how to configure your funnelweb disk. Susan will have several copies available at the meeting and I will configure it for you if you bring the programs that you want on the menus to the class.

The BBS was relocated to my house during February. I have received a new version of the BBS software from Mike Kimble, the author, and will have installed it by the time you read this. Gene Kelly has been our sysop for a number of years and deserves a big THANK YOU for all the time and effort that he has put into it over the years. He also was responsible for tearing the system down and lugging it to the meetings. He never failed to have the system up and running before the next day. Those times when he could not be at the meetings he always called and let me know so that we we could make other arrangements for equipment. Gene is also going to remain active in the club and has accepted nomination as V.P.

There were some exciting new programs released at the WEST FEST last month. It is too early to have them yet for demonstration but we will have them for future meetings.

Barry Boone has released "GIFFY". This program will allow the TI-99/4a to display and convert GIF pictures to TI Artist format. Barry has uploaded a copy of two converted pictures to our BBS as well as a small ad about the product which should appear in this newsletter elsewhere. I will be demonstrating these two pictures at the meeting. You now have the ability to display the fantastic pictures that I showed you on my Geneve on your TI!

Asgard Software released a new SPELL CHECKER called "SPELL IT!" It is a 30,000 word system that can be expanded to 200,000 for hard disk users. It can be purchased for 19.95 in ds/dd, 24.95 in ss/sd, and 34.95 for the HFDC. We will try to get a group discount on this because there should be a lot of interest. Asgard has also released a new module called "EDU PAK". I do not have any more information about this one yet but it was a "SOLD OUT" item at WEST FEST!

Peter Hoddie announced a new product for the Geneve that is being worked on by Wayne Stith. It is an upgrade to Wayne's "TRIAD" program to run in Native Geneve. This would include a new word processor! More on this later.

A small paragraph in the newsletter of the Southwest Ninety-Niners newsletter stated that the HFDC was being sold at a price of 179.90. I will try to verify that before the meeting and I hope it is not a TYPO! This would significantly reduce the price of a hard disk for you system. I paid $300 for my HFDC.

I have had a few calls about bad copies of Mancala. If you were unlucky enough to get a bad copy please bring it to the meeting and get a replacement.

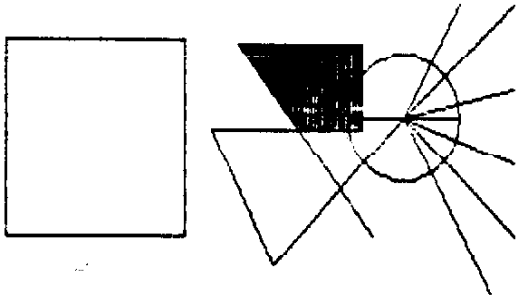
This Month

Configuring Funnelweb 4.21
The 4:30 Class will help you to
configure your funnelweb disk.

PUG EXTRA

At the request of Gary Taylor of the P.U.G. I have created a page on The Printers Apprentice for MDOS. When I first received this program I was worried that it would be as cumbersom and difficult as the original one for the TI994/A. My fears were quelled when I found that learning this excellent program was a breeze. It is true wysiwyg and very easy to learn. The author has installed mouse support and today I received a notice for a new upgrade, version 1.3. If you own a Geneve then this jewel is a must for you.

Use as many different fonts from many different styles as you need, TPA, TIartist, CSGD.



Pictures can be changed as to size or location easily.

Text and pictures can be placed anywhare on the page.

TYPE ON SCREEN

DELETE ANY SIZE!

PITTSBURGH USER GROUP

NEW-AGE/99

By Jack Sughrue
Box 459
East Douglas, Ma. 01516

#2

There's a new (I think) company making software for the TI: Arcade Action, Program Innovators, 4122 Glenway, Wawatosa, WI 53222.

They have a nice version of TETRIS. They also have the usual space shoot 'ems. They have a program called Snowmobile, which is yet another version of the Regena-style skiing/river-travel maneuvering. And they have a bunch of other stuff, all of which is detailed in their free catalog.

But what they have that is WONDERFUL and a true first for the TI Community is a superb cribbage game!

It's perfect in the sense that it is completely playable. It is reasonably fast. It is intelligent and colorful and extremely well designed and in Extended Basic for people who like to add their own little touches, though you won't need to add little touches to this game at all. The unknown author even offers simple suggestions for reducing it of its 60 sectors.

There have never been any good, playable TI cribbage games, but this game, called CUTTHROAT CRIBBAGE, is something else entirely. This game not only lets you play against an intelligent computer but allows some interesting inputs. During the game, for example, if you wish to question the computer's judgment (or would like to test out some odd card combos) you simply type "C" for Count Check at the end of a hand (instead of the default "P" for continuing Play). You may then set up a hand, including play card. The computer will score it, explaining each detail. For example, you must type each card with the pip value first and the suit (S,H,D,C) second. A Five of Hearts would be 5H; a Queen of Clubs, QC; an Ace of Diamonds, AD. You get the picture. So take a hand like 5H, JD, 5S, 5C, with the play card the 5D. Any cribbage players recognize the Grand Hand when they see it and know it equals 29, the highest score in cribbage. The computer will tell you this when you type in that hand. It will also break down all of the patterns by individual scores (15s, Quadruplets, His Nobs) to show you exactly how the hand is scored. You can create any legitimate hand you'd like for detailed analysis by the computer. This is a superb help feature, particularly for the novice. The pro will have a good time with this game, too.

On-screen graphics are equal to the best I've seen for ANY card game. The board on the right side runs hand totals to their new mark before filling in the peg area up to that point. There are three rows of 40 instead of the up-down 30/30 of normal cribbage boards: more like the continuous steeplechase boards which are becoming popular.

But what kind of game does it play? It is a very good opponent that knows the rules perfectly. And you better not make an error in scoring or it will call "Muggins" on you and take the points; thus, the name "Cutthroat." The only cheating I was able to do (and get away with) was to call a Go after a 23 when I had a three left in my hand. I got a point for last card at 23. The computer called Go. I returned Go, though I could have played. It played a four; I played my three and got another point I certainly did not deserve. But I assume the author did not anticipate sneaky little buggers like myself trying to sleaze through a game instead of playing properly.

Except for the ability to cheat at the Go and the inability (on the computer's part) to note a Skunk or Lurch, this is a fantastic game in every way. NEW-AGE/99 rates this an A+! It is user-friendly; it is fast (though giving you time to make your crib-throw decisions); it is nice to look at; it is cheap ($7 gets you this and a couple other programs thrown in; $10 gets you twice as many games, including AA's TETRIS). The playing field is great. Your six cards are dealt at the bottom of the screen nearest you; the computer's opposite near the top. As you discard by pressing C,D,E,F,G, or H (letters assigned to your cards), the crib will be placed near your cards if <u>you</u> dealt or near the computer's if <u>it</u> dealt. You always know whose crib it is. The play is done card by card in the area between you and your opponent. Just like the real thing. Play scores (15, Run, Go, 31, Pairs, etc.) are all announced and scored during play. In addition to the multi-colored pegging "board" on the right, individual totals are kept in boxes next to each player. There is never a moment of confusion in this game.

At the conclusion of play, the hands

and crib are spread out for analysis before scoring. Bear in mind that the computer's scoring is never wrong. All combos are sitting quietly in data statements just waiting for you to score incorrectly. If you do, you get zapped. You can never perform "Muggins" on the machine, but sometimes its play isn't as sharp as your own under some odd play moments. It isn't as wise as some of the best cribbage players I've ever played. (My father, for instance, or my daughter Sue. Or an old Army buddy, Emil, from my days in Germany.) On the whole, though Cutthroat is a worthy opponent, and, as cribbage cannot be played over the phone or by mail the way chess can, this is the next best thing to a human opponent. In some ways, better. It is 3:30 AM right now. I woke and danced The Insomniac's Waltz before settling at my computer. I popped on cribbage. Won two games. Felt good. Decided to write this column, which had been back-burnered for a couple weeks. Who else could I have gotten to play cribbage after 3 AM? And accept defeat so graciously?

Hey! Wait a minute! What if you don't play cribbage? Well, for one thing, you must have had a deprived childhood (and continually deprived adulthood) as cribbage is such fun! It's one of the few card games whose origins are known. It was created by the English gambler, soldier, poet (Why so pale and wan, fair lover? Prithee, why so pale?) Sir John Suckling (1609-1642). It's come down to us across the centuries virtually unchanged. The English still play the 5-card version, the Americans play the 6 (a variation of this century that caught on permanently in spite of considerable criticism by purists).

Anyway, if you don't play, get someone to teach you or get a Hoyle's and, with Cutthroat in front of you, teach yourself. This game makes it easy, particularly with the option of creating any hands you want to learn to score.

My fifth-grade students play it constantly and are even beginning to beat it almost as often as it beats them. Great learning tool.

Finally, at game's end, there is no gloating. The screen fills with "YOUR VICTORY" or "MY VICTORY" without the obnoxious toots, plunks, and burps that usually accompany such announcements. Very professional.

Now for those times when the urge of the cribbage addict comes upon you and no one is around to play, just pop a Foster's, turn on your friendly TI, and go to it.

FUNNELWEB TIPS

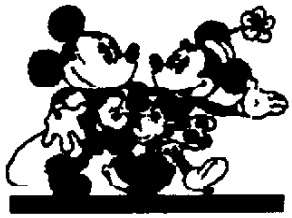
A quick review of some of the control key functions:

CNTRL I	Takes cursor to next tab set
CNTRL J	Takes cursor to beginning of next paragraph
CNTRL K	Deletes to the end of the line
CNTRL L	Takes cursor to top of screen
CNTRL T	Takes cursor to right margin (if cursor is at left margin, otherwise a back tab)
CNTRL V	Takes cursor to left margin
CNTRL W	Takes cursor to beginning of next word
CNTRL Y	Releases left AND right margins

And from the HV99ers comes this neat tip... You can eliminate the need to use the arrow keys to go to the actual filename when loading or saving files. The editor doesn't care if there are a couple of spaces after the "LF" or "SF" commands. So if you type in:

LF <SPACE> <SPACE>

you will find that the cursor is positioned over the first character of the actual filename when it appears on the screen. You no longer have to tab over with the arrow keys before you can change the filename. I REALLY LIKE THAT ONE!!!



ATTENTION TI-TAX USERS

There is a bug in Schedule A. Use the Go to Name function and go to line13. Hit E for edit and you will see the formula SUM(lines9athru12b). This does not seem to pick up the amount entered in line9a. I changed the formula to read SUM(line9a:line12b) and it worked.
Also, when using the overprint, the spouse name will not print. Load FM1040P1 and go to C21. Enter the following names as values. In R4 put jname, in R6 put address and in R8 put city. This will correct the problem.
Our thanks go to Bill Chavanne for giving us a great class on Multiplan and for demoing this great tax program. Happy filing!!!

TI-BASE TIP
From Chick De Marti, LA 99ers

Leave it up to a lazy man to get something done the easy way. This command file is called DO IT.
Here is the premise: You decide to write a program file to print a modified database, and you name it PMINILST....so you type DO MC (short cut #1). When TI-BASE asks you for the name, you type PMINILST. Great! But as you continue to write your program, from time to time you test it, find it needs correction, and start the DO MC... wait then enter PMINILST. After an hour of this, I decided to do something about it. I wrote the program file "DO IT"!

Type DO MC
then IT in answer to what name?
At the blank screen I typed:
MODIFY COMMAND PMINILST
and Fctn-8 to save. Now while I am working on this particular program and I need to make a correction, I type:
DO IT

One last note on the DO IT program. Whenever you decide to work on another program, go into the DO IT program and change PMINILST to the program you want to work on!

SYNONYMY
by Jim Peterson
Tigercub Software

PROGRAM REVIEW
by Sue Harper
Pittsburgh User Group

Synonymy is a fun game created by Jim Peterson of Tigercub Software. All you word buffs who think the word games are all too simple, try this one!

Synonymy begins by explaining what a synonym is: Two words that mean the same. Then the rules are explained. The computer gives the user a word, and a list of six words from which to choose a synonym. The first word when I played was 'pith'. the six choices were 'flay,gloomy, slink, pamper, slum, marrow'. As you can see, not kindergarden words! Each correct answer gains you a note for the song DIXIE, and the end is marked by the computer playing the whole song.

This is an enjoyable game, with no penalty for guessing. Jim has even put in the program a way to argue with it: If you think the word you chose IS a synonym and just not the one the computer has in memory, type the word RIGHT, and it will accept your answer no matter how bizarre. Obviously, not a game to give to the kids for a test, but fun none the less.

If you like word puzzles, I recommend this one.

THE KIDDIE CORNER
by Sue Harper
Pittsburgh Users Group

A series of articles for kids of all ages to get you started on programming.

This month I have typed up a small program that will show how you can add together some of these program ideas to have some fun. Try your hand at being creative, and don't forget your local friendly librarian when you really get into programming. The deal at the club is that if you donate a program, we will give you a blank disk in return, and even tell the members how wonderful you are!

```
100 CALL CLEAR
110 CALL SCREEN(7)
120 OPEN #1:"SPEECH",OUTPUT
130 FOR X=2 TO 16
140 CALL HCHAR(12,X,104)
150 CALL HCHAR(12,X-1,32)
160 CALL HCHAR(12,32-X,105)
170 CALL HCHAR(12,32-X+1,32)
180 NEXT X
190 CALL HCHAR(12,16,104)
200 CALL HCHAR(12,177,105)
210 PRINT #1:"HI!"
220 GOTO 210
```

This program will turn the screen to another color (guess which one) and have the letters h and i march from the left and right sides of the screen, stop in the middle to spell the word hi and have the computer say HI over and over again until a.) you press FCTN 4, b.) you go crazy, or c.) there is a power failure.

What would you like to have march from the edge of the screen? You can use any of the letters, numbers or symbols on the keyboard. Just look up the ASCII code and put it in the CALL HCHAR message in place of the 104 and 105. In a future column we will work on designing our own graphics, but that is quite involved.

See you next month. . .

PRINTERS #6

BY JOHN F. WILLFORTH(MAR. '90) ML=MORE LATER

THIS MONTH AN EXPLANATION OF THE BASIC GRAPHIC COMMAND'S N1 AND N2 PARAMETERS.

EXAMPLE 1

```
100 OPEN #1:"PIO.CR"
110 PRINT #1:CHR$(27)&"K"&CH
R$(178)&CHR$(1);
120 FOR J=1 TO 14
130 FOR I=0 TO 6 STEP .2
140 PRINT #1:;CHR$(2^INT(3.4
*(SIN(I)+1)));
150 NEXT I
160 NEXT J
```

EXAMPLE 2

```
100 OPEN #1:"PIO.CR"
110 PRINT #1:CHR$(27)&"K"&CH
R$(31)&CHR$(0);
120 FOR J=1 TO 1
130 FOR I=0 TO 6 STEP .2
140 PRINT #1:;CHR$(2^INT(3.4
*(SIN(I)+1)));
150 NEXT I
160 NEXT J
```

EXAMPLE 3

```
110 PRINT #1:CHR$(27)&"K"&CH
R$(248)&CHR$(0);
120 FOR J=1 TO 8
```

N1,N2 CALCULATOR

```
100 CALL CLEAR
110 INPUT "NUMBER OF GRAPHIC
 COLUMNS   NEEDED (UP TO 816
 FOR WIDE  AND 480 FOR NARRO
W):":C
120 IF C>767 THEN 180
130 IF C>511 THEN 210
140 IF C>255 THEN 240
150 N1=C
160 N2=0
170 GOTO 270
180 N2=3
190 N1=C-768
200 GOTO 270
210 N2=2
220 N1=C-512
230 GOTO 270
240 N2=1
250 N1=C-256
260 GOTO 270
270 PRINT "THE GRAPHIC COMMA
ND SHOULD BE:";"N1=";N1;" AN
D ";"N2=";N2
280 INPUT "ANOTHER (Y/N)":YN
$
290 IF YN$="Y" THEN 100
300 END
```

THE LINE OF GRAPHICS ABOVE WAS CREATED WITH THE GRAPHIC COMMAND "ESC,K,N1,N2", ALONG WITH THE COMPUTER ACTUALLY DOING WHAT A COMPUTER IS SUPPOSED TO DO, CALCULATE. LINE 140 DOES THE CALCULATIONS TO PUT THE DOTS IN THE SINUSOIDAL PATTERN. TRY LEAVING THE ".CR" OUT OF LINE 100 TO SEE WHAT AFFECT THIS HAS ON THE PRINTERS ABILITY TO PRINT A CLEAN GRAPHIC PATTERN ON THE PAPER.

THE MAIN SUBJECT HERE IS, HOWEVER, THE VARIABLES N1 AND N2 IN THE GRAPHICS COMMAND. THE CHR$(27)&"K" SET THE GRAPHIC, BUT THE PRINTER MUST ALSO KNOW HOW MANY COLUMNS MUST BE RESERVED FOR GRAPHICS. N1 RANGES FROM 0 TO 255 COLUMNS, WHILE N2 REPRESENTS/INDICATES HOW MANY OF THE 256 COLUMN BLOCKS MUST BE RESERVED. I.E. N2 ACTS AS A CARRY EACHTIME N1 COUNTS EXCEED 255. EXAMPLE 1 SHOWS 14 CYCLES OF 31 DOTS PER CYCLE OR 434 COLUMNS OF DOTS FROM THE LEFT TO RIGHT MARGIN. YOU CAN SEE THAT IF WE DIVIDE 434 BY 256 WE GET 1 WITH A REMAINDER OF 178. N1 IS NOW 178 AND N2 IS THE VALUE OF 1. EXAMPLE 2 IS A SINGLE 31 COLUMN CYCLE WHICH CAUSES N1 TO BE 31 AND N2 TO BE 0. EXAMPLE 3 IS HERE TO FURTHER INFORCE THIS PATTERN. AS THE N VALUES CHANGE, YOU WILL SEE LINE 120 CHANGE TO ACCOMODATE THE CHANGING NUMBER OF COLUMNS. DIVIDE THE NUMBER OF COLUMNS BY THE NUMBER OF COLUMNS/CYCLE. THIS IS IMPORTANT. THE NUMBER OF COLUMNS MUST MATCH THE NUMBER RESERVED, OR THE PRINTER WILL NOT FUNCTION PROPERLY.

THE PROGRAM TO THE LEFT HAS ONE SIMPLE FUNCTION, AND THAT IS TO CALCULATE THE N1 AND N2 VALUES FROM THE TOTAL COLUMN NUMBERS THAT YOU DECIDE YOU NEED. I AM AGAIN NOT A PROGRAMMER, BUT WANTED THIS PROGRAM TO BE IN CONSOLE BASIC AS ARE ALL THE EXAMPLES HERE. BECAUSE SOME OF YOU HAVE WIDE CARRIAGES, THE WIDER LINE CAN BE CALCULATED HERE.

USING PRINTERS #4, #5, AND #6 AS A GUIDE, YOU SHOULD BE ABLE TO START WRITING PROGRAMS TO SUPPORT GRAPHICS. I KNOW YOU WILL HAVE PROBLEMS, CALCULATION PRINTER TYPES, ETC. DON'T GIVE UP, BE AS PERSEVERING AS YOU CAN, AND YOU WILL FIND ENJOYMENT AND SATISFACTION IN MASTERING THE PRINTER.

(REQUIREMENT: BASIC CONSOLE, INTERFACE FOR PRINTER, PRINTER)

ML

F-TIDBIT #9

THE <BUILDS...DOES> CONSTRUCT IN TI-FORTH

This tutorial is being written upon request by a TI-FORTH enthusiast who says that he has a problem figuring out <BUILDS...DOES>. It has been a long time since I wrote the last TUT, but I am not quite out of practice - having sporadically engaged in issuing Tidbits - and what follows is my humble attempt to oblige.

Somebody (I don't remember who) once wrote that "the most powerful programming tool you have in FORTH is the ability to define new defining words." The problem lies in "separating the compile-time action of the 'DEFINING' word from the run-time action of the 'DEFINED' word." How true. Let's see if we can shed some light on the matter.

If you are familiar with the DEF statement of Extended Basic we can use it as a starting point because <BUILDS...DOES> is somewhat akin to it. When you define a function in XB nothing visible happens when the program is loaded. But it has been placed in memory and is ready to perform if called upon. In other words, it has been compiled, and as soon as the program runs and encounters the name of the function it will be executed as defined - the run-time action. This may be a bit oversimplified but should give you an idea of what is meant by compile-time and run-time action.

<BUILDS..DOES> allows you to define defining words which is indeed a powerful tool. What it means is that the defining word, when invoked, creates a new word which does exactly what the defining word specifies. I am sure you have used defining words already without being aware of it: VARIABLE and CONSTANT are defining words. Since they are coded in assembly and part of the kernel you may not have realized that both use <BUILDS...DOES>. If they were written in high-level and listed somewhere on one of the screens, they would look like this:

```
: VARIABLE   <BUILDS , DOES> ;     ( n --- )

: CONSTANT   <BUILDS , DOES> @ ;   ( n --- )
```

As you can see, there is very little difference in their definitions at least in the compile-time action which is the part between <BUILDS and DOES>. Both store the parameter n in the first available memory cell after <BUILDS has created a new dictionary entry. Thus, no matter whether you use 5 VARIABLE FIVE or 6 CONSTANT SIX, each contains or represents a certain value. The significant difference lies in their run-time action. In VARIABLE there is no run-time action (nothing follows DOES>, while CONSTANT performs a fetch during run-time. The result is that when you invoke FIVE only its address is left on the stack and you must use a @ or ? to retrieve or retrieve and display its current value. On the other hand, SIX also leaves its address on the stack but the @ (after DOES>) uses it to fetch its value and puts it on the stack. This is precisely what you have known all along: You must fetch the value of a variable when you need it while a constant's value is put on the stack by invoking its name. Now let's see how we can separate the compile-time and run-time actions of a defining word:

```
def word   BUILDS (compile-time action) DOES> (run-time action)
```

or - in terms of VARIABLE and CONSTANT - this is what happens:

```
5 VARIABLE FIVE
          <BUILDS (create a dictionary entry named FIVE,
                   store 5)
          DOES>   (no action, i.e., FIVE's address is left on
                   the stack and @ must be used)

6 CONSTANT SIX
          <BUILDS (create a ditionary entry named SIX,
                   store 6)
          DOES> @ (fetch, i.e., 6 is left on the stack)
```

Now look at the definitions of the words 2VARIABLE and 2CONSTANT in Appendix C, page 5, of the TI-FORTH manual (Notes on Starting Forth). These words are intended for double-precision (32-bit) numbers but you will find that they follow the same pattern with two exceptions: when you initialize a 2VARIABLE it automatically defaults to zero - the 0. following <BUILDS does that - and CONSTANT uses 2@ instead of @. In order to utilize double-numbers you must, of course, use double-number operators.

Are you beginning to see the light? Take a look at the welcome screen (#3). Here we find colon definitions galore to boot the load options like -EDITOR, -GRAPH, etc. They all perform the same task, i.e., boot something beginning with a specified screen number. Let us define a defining word and do away with those definitions. We know that the words being defined must contain a screen number and at run-time will have to do a LOAD starting from that screen. Let's call our defining word BOOTS:

```
: BOOTS  <BUILDS , DOES> @ LOAD ; ( n --- )
```

The compile-time action consist of storing the beginning screen number n which is done by the comma after <BUILDS. (If you don't know about comma, look up its definition in the manual's glossary.) At run-time the screen number is fetched and LOAD is performed. Now BOOTS can take care of the load options if we use statements like those below instead of the colon definitions.

```
33 BOOTS -SYNONYMS  (same as : -SYNONYMS 33 LOAD ; )
34 BOOTS -EDITOR    (same as : -EDITOR   34 LOAD ; )
etc. etc.
```

By now you may have gotten the misleading impression that <B..D> can only store parameters. Don't be fooled, it can do anything a colon definition is capable of as the following examples will show. Here, for instance, is a defining word to initialize two-dimensional arrays:

```
: 2D-ARRAY   ( #rows #columns --- )
             <BUILDS  2DUP   ( dup the parameters )
             , ,             ( store them )
             * ALLOT         ( multiply them and allot the space )
             DOES> ;
```

Note the 2DUP word which is not part of TI-FORTH. You can substitute OVER OVER or add 2DUP (: 2DUP OVER OVER ;) to your dictionary before defining 2D-ARRAY. As you can see, the compile time action contains a little more than just a comma or two to store parameters:

it computes the number of bytes to allot to accommodate the array. (If you expect to have numbers greater than 255 you would have to multiply by 2 again in order to allot space for 16-bit words.) While it is not imperative to store the dimensions of the array in the first memory cells as this word does, we'll see shortly why this is a good idea.

Assume we want to use this array to store the scores (tests or golf or whatever) of four people over a period of 26 weeks, meaning that the array needs to be 4x26, and we'll call it SCORES.

```
4 26 2D-ARRAY SCORES
```

creates the array. To make sure it contains the correct dimensions, we can check the first two memory locations with

```
      SCORES ?          26 ok
  and SCORES 2+ ?        4 ok
```

To digress a bit from <BUILDS...DOES> for the moment, here is the reason for placing the array's dimension in its first two cells: they can be used to access any location within the array with the following word:

```
: CELL  ( row# col# --- addr )
        DUP >R  ( dup address and save it to the return stack )
        @       ( fetch number of columns )
        ROT     ( bring row# to top of stack )
        * +     ( multiply #col by row# and add to col# )
        R>      ( retrieve address from return stack )
        4 +     ( address of first member )
        +  ;    ( add offset )
```

Note that this is NOT a defining word and it is set up to access bytes not 16-bit words. Now we can use SCORES and CELL to enter numbers in the array, just keep in mind that in FORTH we always start the count at zero:

```
75  0 2 SCORES CELL C!     puts 75 in row 1, column 3
90  1 1 SCORES CELL C!     puts 90 in row 2, column 2
```

To check if the values were placed in the correct cells, we enter:

```
0 2 SCORES CELL C@ .          75 ok
1 1 SCORES CELL C@ .          90 ok
```

With the defining word 2D-ARRAY you can set up arrays to you heart's content. But since my purpose here is to explain <BUILDS...DOES> I won't go into any further details about arrays. Instead I will give you a defining word with pratical value. Its author is Michal (sic) Jaegerman of Edmonton, Alberta, Canada.

```
: PRINTS    ( n1, n2, .. number of n's ---- )
            <BUILDS HERE SWAP DUP C, ALLOT
                    HERE 1-
                    DO I C! -1 +LOOP
                    HERE -CELLS DP !
            DOES> SWCH COUNT TYPE UNSWCH ;
```

This should convince you that anything which can be done with a colon definition can also be achieved with a defining word. If you disect the compile-time portion of PRINTS you find that it stores (compiles) the number of parameters needed into the first byte, then uses that number to store the parameters with a DO-LOOP. The run-time action consists of sending the parameters to the printer. Since all printer commands are essentially alike (one or a sequence of ASCII values are transmitted to the printer) a defining word is a perfect way to create them. For example, to set my printer up for emphasized mode, I need to send ESC E. Thus

```
27 69 2 PRINTS EMPHASIZED
```

creates the word EMPHASIZED which, when invoked, sends the command to the printer. In a like manner, you can create words for all printer commands you use frequently. All that's required are the ASCII values for the command itself, the total number of values, PRINTS and a word which you select (hopefully with some mnemonic value).

I hope the foregoing has provided some help in understanding <BUILDS...DOES>. Keep in mind that there is no need to define a defining word unless you want to create a number of words with similar functions. If that is not the case, stick with colon definitions.

EOF/LW

FROM THE LIBRARIAN
by Sue Harper

I thought that I would take to opportunity to help you all lighten up a bit here, so here's a little library contest.

RULES:
1.) Answer all the questions.
2.) Put your name on the paper.
3.) Copies are permitted. You may enter any number of times.
4.) Entries must be hand delivered to the librarian at the March PUG meeting NO LATER THAN 6:00 pm! Winner will announced at the meeting.
5.) The decision of the librarian is final and not to be argued with! The winner will be randomly selected from all the completely correct answers received. What you win will also be announced at the March meeting!

GOOD LUCK!!!!!
1.) What is the name of the librarian?_____
2.) How many sections of the library are there? _____
3.) Which section has the most disks? _____
4.) What is on disk UTILFX6016 and UTILFX6017? _____
5.) Which section has the least disks? _____
6.) In what section would you find music? _____
7.) Where would you find a math quiz? _____
8.) What disk is Picasso? _____
9.) What is the librarian's phone number? _____
10.) I do the work, who gets the money? _____

See you at the meeting . . .

CORCOMP INFORMATION

CORCOMP HAS BEEN TAKEN OVER BY A NEW COMPANY. THEIR LETTERHEAD READS AS FOLLOWS:

INTERNATIONAL
DIVERSIFIED TECHNOLOGIES,INC.
2211-G E. Winston Road, Anaheim, CA 92806, USA
(714) 635-1815, Telex 9102400820, Answer Back: IDT UQ .

THE COMPANY STILL MANUFACTURES AND REPAIRS CORCOMP ITEMS. FOR IN OR OUT OF WARRANTY SERVICE, YOU MUST CALL (714) 956-4450 TO GET A RMA (RETURN MATERIAL AUTHORIZATION NUMBER). OF COURSE, YOU ARE TALKING TO A TAPE AND YOU GIVE ALL THE INFORMATION.

YOUR RMA, WHEN RECIEVED COMES WITH INSTRUCTIONS AS TO WHAT YOU DO. YOU MUST PREPAY, AND AS OF 2/2/90 THE PRICE WAS $50 FOR EACH INDIVIDUAL ITEM EXCEPT IT WAS $20 FOR THE PIO PLUS AND IBM CONNECTION. THE NEW ADDRESS IS NOT N. TUSTIN RD. AS MAY BE LISTED IN YOUR OLD MANUAL. IT IS:

IDT, INC.
2211 E. WINSTON RD, SUITE G
ANAHEIM, CA 92806

SHOULD YOU WANT TO TALK TO A LIVE VOICE, CALL THE NUMBER IN THE IDT LETTERHEAD ABOVE.

TEX COMP IS A DISTRIBUTOR FOR CORCOMP. THE CATALOG I RECEIVED WITH MY ORDER PRETTY MUCH EXPLAINS WHY (ON P41) THE OTHER HOUSES DROPPED CORCOMP. THE CATALOG HAS A PRICE OF $2 ON THE COVER, BUT YOU MIGHT GET ONE FREE BY CALLING THE ORDER NUMBER. YOU DEFINATELY GET ONE BY ORDERING SOMETHING AND WILL STAY ON THEIR CATALOG LIST. THE ORDER NUMBER IS 1-818-366-6631. ONCE AGAIN, YOU ARE TALKING TO A MACHINE SO THAT YOU CANNOT CHECK PRODUCT AVAILABILTY, OR WITHOUT A CATALOG, THE PRODUCT PRICE. THEY DO ASK FOR AN EVENING TELEPHONE NUMBER, AND I THINK THEY WILL RETURN YOUR CALL, BUT IT MAY TAKE A COUPLE OF DAYS TO GET AROUND TO IT.

TO GET IMMEDIATE ACTION, CALL 1-818-993-5606 AND ASK FOR JERRY PRICE (OWNER). THATS WHO I DEALT WITH. THE CATALOG DOES NOT LIST SPECIAL SHIPPING, BUT EVEN THROUGH THE ORDER NUMBER, I BELIEVE IT CAN BE SPECIFIED. IF NOT CALL JERRY, AND ARRANGE FOR RED (OVERNIGHT) OR BLUE (2 DAY) SHIPPING WHEN IN A HURRY. YOU PAY THE EXTRA FREIGHT. USING A CREDIT CARD COSTS YOU 3% OF THE BASE PRICE.

EDITOR'S NOTE
I received this letter in the mail and thought it was worth passing on.

The PUG would like to thank Cliff Pemper who renewed his membership this month.

THE PUG MEETS
ON THE 3RD SUNDAY OF THE MONTH
AT COMMUNITY COLLEGE OF ALLEGHENY COUNTY
OFF ROUTE 885 NEAR CENTURY III MALL

CLASSES BEGIN AT 3 PM
GENERAL MEETING BEGINS PROMPTLY AT 6PM

MAR 1990						
S	M	T	W	T	F	S
4						
11		TICOFF				17
18	MEETING					
25						

APR 1990						
S	M	T	W	T	F	S
1						
8						
15	MEETING					
22						
29						

PUG OFFICERS

Pres:	Gary Taylor	412-341-6874
V Pres:	Mike Sealy	614-282-5627
Treas:	Frank Shoemaker	412-921-8702
Rec Sec:	Herb Reich	412-531-9023
Librarian:	Susan Harper	412-464-0525
Mem Chair:		
Cor. Sec.& NL Editor:	Audrey Bucher	412-881-5244

SCHEDULE

3-4:30 Questions, Problems and Answers.....Rm. 482
4:30-6 Configuring Funnelweb v4.21.....Rm. 482
4:30-6 Printers with John Wilforth.....Rm. 475
6:00-? General Meeting
Demo...Artist Print Shop
ELECTIONS

DUES $15/YR

PITTSBURGH USER'S GROUP
P.O. Box 8043
Pittsburgh, PA 15216

DALLAS TI HC UG

BOX 29863
DALLAS, TX. 75229

DATED MATERIAL
Please Deliver by
MAR 14th

PUG BBS
412-341-4820
300/1200/2400 BAUD
24 HOURS